AIR PERMIT AND/OR EXEMPTION

AIR ACCOUNT #	30411W
AIR PERMIT OR EXEMPT	TION# 2017
FILE TYPE:	
VOL#	
INCLUSIVE DATES:	974-1995

Media Code/Format: M

□ Microfiche

□ Roll Microfilm

1

DATE: 10-23-91 TIME: 18:39:60

***GENERAL PERMIT INFORMATION

PERMIT: 2617 ENGR: BLACKSTOCK, RITA /CLARK, LERGY S. GROUP: METL ID: DBO411W

ISSUED TO: JOHNSON CONTROLS BATTERY GROUP, INC.

UNIT NAME: WIRTZ GRID CASTING MACHINE

OPERATING SCHEDULE: 24.0 HRS/DAY 5 DAYS/WK 52 WKS/YR

LAT: 32-54-15 LONG: 096-40-00 REGION: 8 COUNTY: DALLAS

NEAR CITY: GARLAND LOC: 1111 SHILDH RD.

***PERMIT/SITE CONTACT INFORMATION:

PERSON: JORDAN S. HARWOOD, P.E. ADDR1: P.O. BOX 591

TITLE: MANAGER-ENVIRONMENTAL CONTROL ADDR2:

CITY: STATE: WI ZIP: 53201 PHONE: (414)228-2650 MILWAUKFE

** OPERATING ** ** CONSTRUCTION ** ** CONTINUANCE **

TYPE APPL (C,S,X): (C) OPERATION START : NOTICE MAILED : 02-28-90 APPL RECD : 07-29-74 OPER APPL RECD : 09-05-75 APPL RECD : 04-26-90

DEFIC LTR SNT OPER APPL CMPLT : DEFIC LTR SNT : 05-11-90 : SUPP INFO REQ DISP(1,0): (I) 10-23-75 : 06-22-90

SUPP INFO REQ : SUPP INFO RECD : 12-27-74 OPR TYPE(P,S) : (9) SUPP INFO RECD : 06-25-90 APPL CMPLT APPL CMPLT : 08-02-90

COMP LTR SNT COMP LTR SNT

PUB NTC SNT PUB NTC PUB * I = ISSUED D = DENIED * : 06-29-90 PUR NTC SNT :

PUB NTC PU9 * E = EXPIRED : 07-15-90

PUB HEAR (R,H) : () * C=CNST S=SPECIAL PUB HEAR (R.H) : ()

CNST TYPE (C.X.S): (C) * X=EXEMPT R=OPER * DISP(I,D,E):(I):09-13-90

DISP (1) : 01-24-75 *************

CNST START DATE :

*** EMISSIONS CHANGED :

***REMARKS: PROP.LINE SAMPLE MADE TO DETERMINE ACTUAL CONDITIONS FROM FAC. LEAD MEAS LESS THAN 0.5 MICROGRAMS PER CUBIC MTR ONE HR SAMPLE.OWN CHG FR JOHNSON

CONTROLS, INC. PERM. VOIDED 10/2/91-REISSUED UNDER R-6710.

***OTHER PERMIT DATES:

VOID/HOLD CODES: PO-PLT DISMANTLED APP/PERMIT VOIDED: 10-02-91 REASON: RE CR-COMPANY REQUEST TI-TIME EXPIRED APP ON HOLD UNTIL: DD-DATA DELAY TD-TECH DIFFICULTY

REASON: CONST STOPPED UNTIL: RE-REISSUED NR-NO RESPONSE

***PERMIT TYPES/STANDARDS:

NEW MAJ SOURCE:> 100 TPY: SIC: 3691

MAJOR MODIFICATION: PORTABLE: RELATED PERMITS: SUFFIX REASON

NON-ATTAIN REVIEW: NSPS: TACB: CHG LOC: INSIGNIFICANT EMISSIONS: X NESHAP: PSD-TX: CHG OWN: X

TOXIC MATERIALS: STD EX NO.: FUEL CONVERSION:

***AIR CONTAMINANT INFORMATION: MAX ALLOWARLE PATE ACTUAL

CODE NAME LBS/HR TONS/YR TONS/YR

***ABATEMENT EQUIPMENT:

DICK WHITTINGTON, P.E. CHAIRMAN

BOB G. BAILEY VICE CHAIRMAN

STEVEN N. SPAW, P.E. EXECUTIVE DIRECTOR



JOHN L. BLAIR MARCUS M. KEY, M.D. CALVIN B. PARNELL, JR., Ph.D., P.E. WILLIAM H. QUORTRUP C. H. RIVERS WARREN H. ROBERTS MARY ANNE WYATT

February 18, 1991

Mr. Jordan S. Harwood, P.E. Manager, Environmental Control JOHNSON CONTROLS BATTERY GROUP, INC. P. O. Box 591 Milwaukee, WI 53201-0591

> Re: Garland, Dallas County Account ID No. DB-0411-W

Dear Mr. Harwood:

We appreciate being informed that Johnson Controls, Inc. has formed a wholly-owned subsidiary, Johnson Controls Battery Group, Inc. which is the new owner of the facilities identified below which were previously owned by Johnson Controls, Inc. Our files have been updated to indicate that the change has occurred.

Permit No.	Facility
R-662	Vacuum Cleaner
R-2402	Lead Oxide Plate Drying Oven
R-2617	Wirtz Grid Casting Machine
R-6710	Lead Panel Casters (2)
R-6898	Lead Oxide Panel Coating, Drying & Separating Facility
R-6899	Lead Remelt and Recovery System
R-6900	Cover & Container Heat Sealing Facility
R-6901	Cast on Strap Line No. 4
R-6902	Cast on Strap Line - Reed Stacker Line No. 3
R-6903	Lead Dioxide Storage Tanks - 191 & 192
R-6904	Battery Repairs & Cast on Strap Line

We understand that there will be no change in the type of pollutants emitted and no increase in the quantity of emissions. You are reminded that these facilities must be in compliance with all Rules and Regulations of the Texas Air Control Board and the requirements of these permits at all times.



February 18, 1991

Mr. Jordan S. Harwood

-2-

Thank you for this information and for your commitment to comply. Your cooperation and interest in air pollution control are appreciated.

Sincerely,

Cecil Bradford

Cecil Bradford CORE Division Permits Program

cc: Mr. Melvin Lewis, Regional Director, Fort Worth

Johnson Controls, Inc.
Batt Group
575 Green Bay Avenue
Post Office Box 591
Milwaukee, WI 53201-0591
Tel. 414-228 1200



Mr. Steven Spaw, P.E. Executive Director Texas Air Control Board 6330 Hwy 290 East Austin, TX 78723

Far

December 28, 1990

Dear Mr. Spaw:

On November 19, 1990, Johnson Controls, Inc. formed a wholly-owned subsidiary into which the business of the Company's Battery Group is being transferred. The name of the new subsidiary, incorporated in Wisconsin, is Johnson Controls Battery Group, Inc.

In recognition of this transfer, we hereby request that the following permits and files be updated to reflect the new subsidiary as the permittee. In addition, please note the following personnel changes:

Corporate Contact: Jordan Harwood

Facility Contact: David Cooper

Permit Numbers:

Number	Process	S/N		
R2402	OSI Oven 1	217		
R2617√	Grid Caster 6	155		
R662	Vacuum System 1	22		
R6710 V	Grid Caster 1	193		
	Grid Caster 2	195		
R6898 V	Paste Mixers 1, 2, 3 Baghouse	187	and	188
7	Pasting Lines 1, 2, 3			
R6899 J	Paste Mixers 1, 2, 3	189		
	Salvage Rotoclone			
R6900 ~	6 Heat Seals	208	and	209
R6901 /	COS 4 and 5 Baghouse	21		
R6902 V	COS 2 and 3 Baghouse	18		
R6903 /	Oxide Storage Tanks	191	and	192
R6904 V	Mark V COS Baghouses	186		
	2 Repair Benches			

Mr. Steven Spaw December 28, 1990 Page Two

If you have any questions, please call me at (414) 228-2452. Thank you for your cooperation.

Sincerely,

JOHNSON CONTROLS, INC.

Jordan S

Manager, Environmental Control

cc: J. G. Lawrence

Ì

PAGE:

: 74-25-90

PD-PLT DISMANTLED

SROUP: METL 10:05)411W

DATE: 06-27-90 TIME: 18:05:28

***GENERAL PERMIT INFORMATION

PERMIT: 2617 INGR: PLACKSTOCK, PITA /

UNIT NAME: WIRTZ GRID CASTING MACHINE

OPERATING SCHEDULE: 74.7 HRS/DAY 5 DAYS/WK 52 WKS/YR

LAT: 32-54-15 LONG: 206-40-02 REGION: 8 COUNTY: DALLAS

NEAR CITY: GARLAND LOC: 1111 SHILOH ROAD

***PERMIT/SITE CONTACT INFORMATION:

PERSON: JORDAN S. HARWOOD 40081: P.O. PAX 501

MGR ENVIRONMENTAL CONTROL TITLE: ADDR7:

MILWAUKEE STATE: WI ZIP: 53201 PHONE: (414)228-2650 CITY:

** CONSTRUCTION ** ** OPERATING ** ** CONTINUANCE **

TYPE APPL (C.S.X): (2) OPERATION START : MOTICS MAILED : 02-28-90 APPL RECD : 07-23-74 DRER APPL DECD : 19-15-75 APPL RECD

DEFIC LTR SNT : OPER APPL CMPLT : DEFIC LIR SVI : 5-11-90

SUPP INFO REQ : DISP(I,D): (I) 10-23-75 SHEP INFO RED : 6-22-90

SUPP INFO RECD : 6-25-90 SUPP INFO RECD : 12-27-74 DPR TYPE(R,S) : (2) APPL CMPLT ****** APPL CMALT :8-2-90

COMP LTR SNT COMP LTP SNT ÷ PUP NTC SNT * I = ISSUED D = DENIED * :6-29-90 PUB NTC SNT

PUB NTC PUB * EEEXDIDED : 7-15-90

PUB HEAR (R.H) : () * C=CNST S=SPECIAL * CNST TYPE(C.Y.S): (C) * X=EXEMPT R=OPED * BRU HEVB(5'H) : ()

DISP(1,0,E): (I): 9-13-90

DISP (I) : 01-04-75 **************

CNST START DATE :

***EMISSIONS CHANGED :

***REMARKS: PROPERTY LINE SAMPLE MADE TO DETERMINE ACTUAL CONDITIONS

FROM THIS FACILITY LEAD MEASURED LESS THAN D.5 MICROGRAMS REP

CUBIC METER ONE HOUR SAMPLE

***OTHER PERMIT DATES:

VOID/HOLD CODES: APP/PERMIT VOIDED: REASON: CP-COMPANY REQUEST TI-TIME EXPIRED

DD-DATA DELAY TO-TECH DIFFICULTY
RE-REISSUED NR-NO RESPONSE APP ON HOLD UNTIL: REASON:

CONST STOPPED UNTIL:

**PERMIT TYPES/STANDARDS:

SIC: 3631 NEW MAJ SOURCE:> 190 TPY:

MAJOR MODIFICATION: PORTABLE: PELATED PERMITS: SUFFIX REASON

TAC3: PSD-TX; NON-ATTAIN REVIEW: MSPS: CHG LOC: INSIGNIFICANT EMISSIONS: X NESHAP: CHG OWN:

TOXIC MATERIALS: SID EX NO.: FUEL CONVERSION:

MAX ALLOWARLE RATE ACTUAL LRS/HR TONS/YR TONS/YR AIR CONTAMINANT INFORMATION:

CLAO PONSIVE NAME CODE

BATEMENT EQUIPMENT:

DICK WHITTINGTON, P.E. CHAIRMAN

BOB G. BAILEY VICE CHAIRMAN

STEVEN N. SPAW, P.E. EXECUTIVE DIRECTOR



JOHN L. BLAIR MARCUS,M. KEY, M.D. CALVIN B. PARNELL, JR., Ph.D., P.E. WILLIAM H. QUORTRUP C. H. RIVERS WARREN H. ROBERTS MARY ANNE WYATT

September 13, 1990

Mr. Jordan S. Harwood Manager, Environmental Control JOHNSON CONTROLS, INC. P.O. Box 591 Milwaukee, Wisconsin 53201

Re: Continuance to Operate Permit

Permit No. R-2617

Wirtz Grid Casting Machine Garland, Dallas County Account ID No. DB-0411-W

Dear Mr. Harwood:

Pursuant to Rule 116.12(d) of Regulation VI of the Texas Air Control Board, your permit to operate is hereby continued. Enclosed are new provisions and an emission allowable table. Please attach these to your permit. We will appreciate your carefully reviewing the conditions of the permit and assuring that all requirements are consistently met.

Thank you for your cooperation in sending us the information necessary to evaluate your operations and for your commitment to air pollution control. Please let us know if you have any questions.

Sincerely,

To Steve Spaw, P.E.
Executive Director

Enclosures

cc: Mr. Melvin Lewis, Regional Director, Fort Worth



GENERAL PROVISIONS

R-2617

- 1. Equivalency of Methods It shall be the responsibility of the holder of this permit to demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods and monitoring methods proposed as alternatives to methods indicated in the provisions of this permit. Alternative methods shall be applied for in writing and shall be reviewed and approved by the Executive Director prior to their use in fulfilling any requirements of this permit.
- 2. Sampling Requirements If sampling of stacks or process vents is required, the holder of this permit must contact the Quality Assurance Division of the Texas Air Control Board (TACB) prior to sampling to obtain the proper data forms and procedures. The holder of this permit is also responsible for providing sampling facilities and conducting the sampling operations at his own expense.
- 3. Appeal This permit may be appealed pursuant to Rule 103.81 of the Procedural Rules of the TACB and Section 382.032 of the Texas Clean Air Act. Failure to take such appeal constitutes acceptance by the applicant of all terms of the permit.
- 4. Construction Progress Start of construction, construction interruptions exceeding 45 days and completion of construction shall be reported to the appropriate regional office of the TACB not later than 10 working days after occurrence of the event. This provision shall not apply to operating permits.
- 5. Recordkeeping Information and data concerning production, operating hours, sampling and monitoring data, if applicable, fuel type and fuel sulfur content, if applicable, shall be maintained in a file at the plant site and made available at the request of personnel from the TACB or any local air pollution control program having jurisdiction. The file shall be retained for at least two years following the date that the information or data is obtained.
- 6. Maintenance of Emission Control The facilities covered by this permit shall not be operated unless all air pollution emission capture equipment and abatement equipment are maintained in good working order and operating properly during normal facility operations.

SPECIAL PROVISIONS

R-2617

- Opacity of emissions from the furnace exhaust must not exceed 20 percent averaged over a 6-minute period, except for those periods described in Rule 111.111(a)(1)(E) of Regulation I.
- 2. Lead emissions from this facility shall not cause or contribute to an exceedance of the National Ambient Air Quality Standard (NAAQS) measured at any monitor operated either by the TACB or the company. If an exceedence of NAAQS for the lead does occur, further controls shall be installed and/or implemented as required to limit lead emissions.
- A copy of this permit shall be kept at the plant site and made available at the request of personnel from the TACB or the local air pollution control agency.
- If any significant air pollution emissions and/or nuisance conditions occur, additional controls shall be implemented immediately.
- 5. The owner or operator of this facility shall maintain monthly production records. These shall be made available at the request of personnel from the TACB.
- 6. Total emissions from this facility shall not exceed the values stated on the attached table entitled "Emission Sources - Maximum Allowable Emission Rates." Compliance with these permitted emission limits are based on a maximum hourly production rate of 0.5 tons and a maximum annual production rate of 1,800 tons of lead.

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

R-2617

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission	Source	Air Contaminant	Emission	Rates*
Point No. (1)	Name (2)	Name (3)	#/hr	TPY
155	Grid Caster No. 3	Pb	0.003	0.005
		PM	<0.01	<0.01
		SO2	<0.01	<0.01
		NOx	0.04	0.14
		со	<0.01	0.03
		voc	<0.01	<0.01

- (1) Emission point identification either specific equipment designation or emission point number from plot plan.
- (2) Specific point source name. For fugitive sources use area name or fugitive source name.
- (3) VOC volatile organic compounds as defined in General Rule 101.1
 - NOx total oxides of nitrogen

7.

- SO2 sulfur dioxide
- PM particulate matter
- CO carbon monoxide
- Pb lead
- (4) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.
 - * Based on a Maximum Hourly Production Rate of 0.5 tons. Based on a Maximum Annual Production Rate of 1800 tons.

Emission	rates	are	based	on	and	the	facilities	are	limited	by	the
following	maxim	um o	peratin	g so	chedu	le:					

east consistency and	50000000000 PMS 500 PMB60	WALKET TO \$1000 A CONTROL OF STREET			remember of the contract of th
Hrs/day	Days/week	Weeks/year	or	Hrs/year_	6240
			2000		

NEW SOURCE TECHNICAL REVIEW

Permit No: R-2617

Permit Type: RNEW

City: Garland

Chanty: Dalias

Company: JOHNSON CONTROLS

REQUEST FOR COMMENTS

Remarks

REGION: 8

Approved by Eddie Mack

COMP: X

Approved by: Jim Reed

MODELING

A. Was modeling done? No Type?

B. Violation of NAAUNT

C. Remarks:

FEDERAL APPLICABILITY

FSD7 No NAPAT No Subpart.

MISCELLANEOUS

A. Applicant agrees with proposed sp. provi yes. Date: 8-16-90 Company representative? Mark Ishihara

Contacted by phone

- B. Applicant aware of 18 mo permit expiration? N/A
- C. NOV issued for unauthorized const. /oper" No Date-
- D. Sensitive location with respect to nulsance? No
- . Is site within 3000 feet of any school? No
- F. Franchise tax verified in good standing' N.A. Valid

TECHNICAL REVIEW:

Johnson Controls received its operating permit October 25, 1975 and has now applied for continuance of R 2817. This company manufactures Diehard and Interstate automobile batteries. This permit covers a Wirtz grid caster, in which the lead battery cell grids are cast. Lead is melted in a pot and flows down runners to the grid casting operation. The combustion gases are exhausted to the atmosphere. No control devices are employed in this process. The production rate for this machine is 2° 5 tons/hour and 1.800 tons/year

This permit has not been amended in the past fifteen years Considering the age of this facility and the impact of emissions on the surrounding area, emission control technology is practicable. This facility will operate within the TAUS rules and the Texas Clean Air Act.

NSFS Subpart A and KK are not applicable to this permit since it was constructed prior to January 14, 1980 NECHAIN is not applicable either.

Region and compliance personnel report no violations or complaints in the last five years. This facility is located in a residential

area. There are houses atross the road to the east, northeast, and southeast beginning at less than 300 feet, and there is a dayware center less than 1000 feet to the south-southeast. The nearest public schools are located approximately 4000 feet to the northwest and 3800 feet to the southeast.

No comments or request for hearings were received during the fifteen days of public notice. All continuance requirements have been satisfied.

Ruta Blackstock Permit Engineer GSAVE G

Date: 8-21-90

A Jallet Section Chief/Backup

REVIEW & CONTINUANCE OF OF ERATING PERMIT

Permit No. R-2(Facility name)	old Company Johnson Controls City Garkand Burtz Grid Costing mourine Engr Rita Blackstock	
REGULATION VI RU	Date of expiration of 15-year permit	30
	Do the emissions from the facility comply with all TACB Rules & Regs, and with the intent of the TCAA? YES,	NO
116.12(b)(1)(B)	Is the facility being operated in accordance with all requirements specified in current permit? YES, If 'NO' explain	NO
116.12(b)(1)(C)	Does the facility have the appropriate means to measure significant air contaminant emissions? $\sqrt{N/A}$, YES,	NO
	Does the facility use appropriate control technology, considering costs, age and impact of emissions? \(\forall YES, \)	NO
	Compliance with applicable NSPS? \(\sqrt{N/A}, \text{YES}, \text{Subparts} \)	NO
116.12(b)(1)(F)	Compliance with applicable NESHAPS? N/A, YES, Subparts	NO
* 116.12(b)(2) * 116.12(c)	Is a court order involved? YES, 4. Remarks Public Notification and Comment: 1. Date application is complete	NO NO NO NO
•	4. Pollutants: Priled Oxides No 5. Number of public comments: O Technical issues? YES, WEARING requested? YES, WNO Hearing held? YES, WEETING requested? YES, WNO Meeting held? YES, Remarks 6. Certification of sign posting per 116.7(b)(4)? YES,	NO NO
116.12(d)	The facility meets all CONTINUANCE REQUIREMENTS \(\sqrt{YES}, \)	NO
116.12(e)	If 'NO': 1. Failed to meet (b)(1)?	NO
±		
	FEE - \$ 300.00 fee paid?	



TEXAS AIR CONTROL BOARD FORM PI-1R, PERMIT CONTINUANCE APPLICATION (Page 1 of 2)

١.	APPLICATION IS FOR CONTINUANCE OF: Operating Permit No. R-2017 TACB Plant Site Account No. Pro
	Issued To: Johnson Controls, Inc.
	(Corporation, Company, Government Agency, Firm, etc.)
	Leasted No. 1111 Chileb Bond
	(Ritrest Address, Highway, Distance From Nearest City, etc.)
ΙΙ.	MAILING INFORMATION:
	Person, Title: Jordan S. Harwood Telephone: (414) - 228 - 2652
	Address: P.O. box 50%
	City: Zip: 53201 County: Milwaulee
	City: Silvantee UI Zip: 53201 County: Milwaulee Technical Contact (Person): Mart P. Islihare Telephone: (177) - 228 - 2050
111.	PERMIT HISTORY: Name of Operation or Process of PERMIT UNIT: Grid Caster :3(vas /(), 0/: 155 Operating Permit Date First Issued (Date Approved): October 23, 1075 Permit Revisions (Show Date Approved Of Each): Permit Amendments (Show Date Approved Of Each): Permit Amendments Presently Pending:
	of the Texas Air Control Board (TACB) provide that each TACB Operating Permit be reviewed for Continuance every 15 years. The TCAA provides requirements and guidelines for this review, for which the applicant must provide supporting documentation as shown below: A. Continuance Fee of \$\frac{300}{600}\$ (refer to Rule 116.12 for fee required and remit with this application). B. Furnish a current area map, to scale, showing the location of the property, geographical features such as highways, roads, streams, lakes and significant landmarks, including schools, parks, buildings and residences not owned or occupied by the applicant or the owner of the property on which the facilities are located. C. Describe the method by which significant air contaminants can be or are measured by this facility (CEM, Inventory, etc.). Stack testing at similar equipment. D. Describe the method to determine the impact of each air contaminant on the
	surrounding off-property area. Applicant may be required to submit full scale atmospheric dispersion modeling to establish predicted ambient impacts. Minimal impact E. Is this facility subject to any applicable New Source Performance Standards (NSPS)
	promulgated by the Environmental Protection Agency (EPA)?NO,YES. If "YES", 40 CFR 60, Subpart(s) F. Is this facility subject to any applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS) promulgated by the EPA?NO,YES. If "YES", 40 CFR 61, Subpart(s)
	IF THE FOLLOWING INFORMATION IS NOT CURRENTLY ON FILE, FURNISH COMPLETE INFORMATION ON EACH ITEM:
	G. Furnish a plot plan of the property, to scale, showing the boundaries, plant benchmark (latitude-longitude), the location of all emission points of any air contaminants on the property and true North direction. Identify the emission points by numbers consistent with those in the flow diagram and emissions inventory questionnaire attached; no change, same as current file data; no

significant change but more detailed.
(Continued on page 2 of 2)

TEXAS AIR CONTROL BOARD FORM PI-1R, PERMIT CONTINUANCE APPLICATION (Page 2 of 2)

	parameters for each emission point. I Attach emission calculations or infor	or 1(a), showing emission data and stack include fugitive emissions on the table. The remaining how emissions were determined. as current file data; no significant
,.	of the process and a companion flow of number, where raw materials are intro the general operation of the process eliminate or reduce emissions of air technical considerations and costs of ment and/or process changes that could Data attached; No change, same Purnish one copy of this application to TACB Pernits Divi Furnish one copy of this application to the appropriate T	
/I.	I. I, Marl R. Ishihara	Env. Engineer
	(Name)	(Title)
	and correct to the best of my knowledge of my knowledge and belief, the project way violate any provision of the Texas Civil Statutes, as amended, or any of the Control Board or any local governmental the Texas Clean Air Act. DATE 4 Squ SIGNATURE	and belief. I further state that to the best for which application is made will not in any Clean Air Act, Article 4477-5, Vernon's Texas he Rules and Regulations of the Texas Air ordinance or resolution enacted pursuant to
		er, President, Vice-President, Environmental Director, etc.)

02/01/88

Johnson Controls, Inc. Battery p 1111 Shid Road Post Office Box 461729 Garland, TX 75046-1729 Tel 214 494 2461



RECEIVED

FRANCE PRIGRAM

7-24-90

TO WHOM IT MAY CONCERN:

Please find attached legal affidavit providing proof of publication of the public notification as required for permit renewal R-2617 for this facility. The notices were published on July 14 & 15, 1990.

Sincerely,

Jerre Ross

JR/sjc

PUBLIC NOTIFICATION (SIGN POSTING) CERTIFICATION

AUG 0 2 1990

TEXAS AIR CONTROL BOARD Permits Division 6330 Highway 290 East Austin, Texas 78723

Attention:

Certification:

I certify that the signs required by Texas Air Control Board Regulation VI, Rule 116.10(a)(5) were posted in accordance with the provisions of that section.

Signed by:	_ leve le	ess	
Title:	Process	Engineer	
Company:	Johnson		
Date:	7-31-90		



LEGAL AFFIDAVIT

THE STATE OF TEXAS: COUNTY OF DALLAS

Before me, the undersigned authority on this day personally appeared AUDREY WILSON known to me to be a credible person, who first being sworn, deposed and upon her oath said:

That she is the CLAR of the GARLAND NEWS per which has been regularly and continuously published and of general circulation in the City/Town of GARLAND, TX, for a period of more than one year next preceding the first publication of the attached and that he caused said notice to be published in said newspaper on the following date(s). 7/14 & 7/15

That the attached is a true and correct copy of said notice as published on said date(s) in said __NEWSPAPER

Sworn to and subscribed before me, this the 19THday of JULY 19 90.

County, Texas

ATTACH LEGAL COPY HERE

TO ALL INTERESTED PERSONS AND PARTIES
You are hereby notified of the opportunity for written public comment concerning the application for continuance of permit No. R-2617 by Johnson Controls for cility is emitting the lowing air contam ants: particulate mat and lead oxides. A copy of all mater submitted by the apcant is available contained in the contained at a co

76116, felephone (1732-533), and at the Tr as Air control Boai 6330 Highway 290 Ea Austin, Texas 78723. interested persons materia ments to the Executi Director of the Tex Air Control Board, A fected by emissio air contaminants GN CPN 102 PUB.: 7/14/90 & 7/15/90

LEGAL AFFIDAVIT

THE STATE OF TEXAS: COUNTY OF DALLAS

ATTACH LEGAL COPY HERE

Before me, the undersigned authority on this day personally appeared <u>AUDREY WILSON</u> known to me to be a credible person, who first being sworn, deposed and upon her oath said:

That she is the CLAR of the GARLAND NEWS, a newspa-
per which has been regularly and continuously published and of general
circulation in the City/Town of GARLAND, TX, for a period of
more than one year next preceding the first publication of the attached
LEGAL and that he caused said notice to be published in
said newspaper on the following date(s). 7/14 & 7/15

That the attached is a true and correct copy of said notice as published on said date(s) in said NEWSPAPER

Sworn to and subscribed before me, this the $^{19\text{TH}}$ day of $_{\underline{\text{JUL}},Y}$ 19 $_{\underline{\text{90}}}$.

Notary Public,

County, Texas

28: Communee loddies r more unified ntation in Austin

Page 1A

would would be for a OK, I'll give up said. "I can't see g I want to give tepublican."

ne planned to atbut may not she supports the

ere perfect, we'd ntatives for Gare reality that the are losing popugoing to have to uburbs," Ms. Hill g to fight for it

nmittee is comarland residents olitics who have iter program roject the effects

mmittee has proof models of how e accomplished. hat those models at the Texas cen-, and, therefore, e moot when the released April 1,

e, however, Garne game in its reate legislative preparing for the

ledge, we're the s that, where we what future disike," Day said.

model can maracts and move it districts, recalanticipate how Republicans and ifferent racial side in the new

real good handle I districts might d, and that inforvaluable to othss. "What we've representatives people is, maybe ea what kind of to have and how wn We nut it in

affects all the districts around

This information has proven enlightening to officials who previously had not considered how their desires in districts would impact other areas, Day said.

"It has been positive in so far as the people who have used it, it is giving them advance warning of what kind of changes have to occur and potential changes," Day said.

After the new figures come out Sachse. You just April 1, the legislature has until the end of the session — less than 60 days - to draw new lines.

"That just doesn't allow enough time for options and nuances and permutations of peoples' ideas to come forward. So, people feel like it's been thrust down their throat. They feel they don't have any impact on the process, so I think our program has helped already, is unique in the helped eliminate some of that feeling that people are being left out of the process," Day said.

> The hearings today are open to anyone to speak.

Slim Down While You Fatten your Pocketbook!

Phoenix International offers a great business opportunity for motivated individuals to sell High Fiber, Delicious Tasting Cookies that are used for Appetite Control.

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The G.O.O.D Company Phoenix Center N.E. 2722 W. Kingsley, Ste 109B Garland, TX 75041 278-9199





TO ALL INTERESTED PERSONS AND **PARTIES**

Johnson Controls has made application with the Texas Air Control Board for continuance of Permit No. R-2617 for a Grid Casting Machine in Garland, Dallas County, Texas. The location is 1111 Shiloh Road, Garland, Texas. Additional information concerning this application is contained in the Public Notice Section of this newspaper.

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SUPER SUMMER HOME SPECTACULAR Save Now At Baker's!

Save throughout our showrooms now on bedrooms, dining rooms, occasionals and much, much more. Discover room after room of fully accessorized furniture displays including our spacious Flexsteel & Thomasville Galleries. And while you're in, ask about Baker's Free Design Service.

Hurry, Sale Ends July 21st.

Right now is the best time to invest in a hed-



REQUEST FOR COMMENTS PERMIT CONTINUANCE PERMITS DIVISION

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2.	FACILITY LOCATIO		de		nd. Dallas 1	County					
3.	LATITUDE:		LONG	ITUDE:	* COMP	ANY I.D. NO:	DB - 0411	-W			
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Eddie Mack 6/29/90

Date of Investigation:

05/08/90

County:

Dallas

No

Investigation No:

526083A

Portable: Type:

Permit

COMPANY INFORMATION:

Company Name: Account No.:

Johnson Controls, Inc./Battery Division

DB-0411-W

Location:

1111 Shiloh Road

Garland

Mailing Address:

P. O. Box 461729

Garland, Texas 75046-1729

Mgr. Name:

David Cooper

Title:

Mgr. of Engineering

Phone No.

214/494-2461

Jurisdiction:

080

Account Status:

AA

Account Size:

В

INVESTIGATION DATA:

Contact Name:

Same

Title:

Phone No:

VIOLATIONS:

Rule Number

Description

COMPLAINTS:

Log Number

PERMITS:

Permit No.

Regional Engr.

Austin Engr.

R-2617(renewal)

Eddie Mack

Rita Blackstock

SAMPLING:

Type of Sample

Comments

Investigator:

Approved by:

Million S. X

Date:

6/1/40

May 08, 1990
Dallas County, Page 2
Johnson Controls, Inc./Battery Division

COMMENTS:

This investigation was conducted to provide a basis for comments on the company's application for the continuance of Permit R-2617, originally issued on 10/23/75. This company manufactures Diehard and Interstate automobile batteries. Permit R-2617 covers a Wirtz grid caster, in which the lead battery cell grids are cast. Mr. David Cooper, Manager of Engineering, provided a plant tour. No obvious emission problems were observed. However, it should be noted that there is residential housing immediately across Shiloh Road to the east, northeast, and southeast beginning at less than 300 feet, and there is a daycare center less than 1000 feet to the south-southeast. The nearest public schools are the Walnut Glen Elementary School located approximately 4000 feet to the northwest and the Williams Elementary School located approximately 3800 feet to the southeast. Mr. Cooper agreed to provide a complete copy of the sampling report submitted with the permit continuance application (subsequently received 5/11/90).

RECOMMENDATION:

Make comments on the continuance when requested.

REQUEST FOR COMMENTS PERMIT CONTINUANCE PERMITS DIVISION

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DICK WHITTINGTON, P.E. CHAIRMAN

BOB G. BAILEY VICE CHAIRMAN

STEVEN N. SPAW, P.E. EXECUTIVE DIRECTOR

June 29, 1990



JOHN L. BLAIR MARCUS M. KEY, M.D. CALVIN B. PARNELL, JR., Ph.D., P.E. WILLIAM H. QUORTRUP C. H. RIVERS WARREN H. ROBERTS MARY ANNE WYATT

Mr. Jordan S. Harwood Manager, Environmental Control JOHNSON CONTROLS, INC. P.O. Box 591 Milwaukee, WI 53201

Re:

Permit Application No. R-2617 Wirtz Grid Casting Machine Garland, Dallas County R Blackstock

Dear Mr. Harwood:

This will acknowledge receipt of your application for permit continuance. Rule 116.12(c), Regulation VI, of the Texas Air Control Board (TACB), copy enclosed, requires that you provide public notification of the referenced facilities. You are required to publish the information indicated in Rule 116.10(a)(3) and (4) and post notice at the proposed site according to Rule 116.10(a)(5). Examples of such notices are enclosed.

Additionally, you are required to provide copies of the publication to agencies indicated on the enclosed form. This form also lists the air contaminants that must be included in your public notice. A 15-day comment period begins on the last day the notices are published in the newspaper. In addition to furnishing copies of such notices to the TACB, you are required to certify that the signs required by Rule 116.10 (a)(5) have been posted in accordance with the provisions of that paragraph. Please proceed with these public notification procedures within two weeks. Failure to proceed can result in a determination that the permit cannot be continued.

If you have any questions concerning these requirements, please do not hesitate to contact us.

Sincerely,

Steve Spaw P.E. Executive Director

Enclosures

cc: Mr. Melvin Lewis, Regional Director, Fort Worth





A COPY OF THE NEWSPAPER MOTICES PUBLISHED, AND THE DATE OF PUBLICATION MUST BE FURNISHED TO THE AGENCIES INDICATED BELOW BY AN X IN THE BOX

FEDERAL:

[] Regional Administrator Region 6 Environmental Protection Agency 1445 Ross Avenue Dallas, Texas 75202-2733

STATE:

- [X] New Source Review Program Texas Air Control Board 6330 Hwy. 290 East Austin, Texas 78723
- [X] Texas Air Control Board Regional Office (in the region where the facility is to be constructed)

LOCAL PROGRAMS:

- [] Curzon C. Ferris, M.D., Director ABILENE-TAYLOR COUNTY HEALTH DIST. P.O. Box 6849 Abilene, Texas 79608
- [] Mr. Fred Rodgers, P.E.
 Executive Officer
 Environmental Health Services
 AUSTIN-TRAVIS COUNTY HEALTH DEPT.
 15 Waller Street
 Austin, Texas 78702
- [] Mr. Austan S. Librach, Director Department of Environmental Protection CITY OF AUSTIN P.O. Box 1088 Austin, Texas 78767
- [] Leo D. O'Gorman, M.D., Director BRAZORIA COUNTY HEALTH DEPT. 432 East Mulberry Angleton, Texas 77515
- [] Mr. Leon Decker, P.E.
 Director of Environmental Control
 CORPUS CHRISTI-NUECES COUNTY DEPT.
 OF PUBLIC HEALTH
 P.O. Drawer 9727
 Corpus Christi, Texas 78469
- Mr. Gary Burlbaw, P.E., Manager
 Air Pollution Control Program
 DEPARTMENT OF HEALTH AND
 HUMAN SERVICES
 320 E. Jefferson Street
 Dallas, Texas 75203

- [] Mr. Raul V. Munoz, M.P.H., Chief Environmental and Community Health Services EL PASO CITY-COUNTY NEALTH DIST. 222 South Campbell Street El Paso, Texas 79901
- [] Mr. Tom McDougald, R.S. Environmental Health Officer CITY OF FARMERS BRANCH P.O. Box 340435 Farmers Branch, Texas 75234
- [] Mr. Gene Rattan, Supervisor Environmental Quality Section FORT WORTH PUBLIC HEALTH DEPT. 1800 University Drive Fort Worth, Texas 76107
- [] Karen Kilpatrick, Director Pollution Control Division GALVESTON COUNTY HEALTH DIST. P.O. Box 939 La Marque, Texas 77568
- [] Mr. Allison R. Peirce, Director HARRIS COUNTY POLLUTION CONTROL DEPT. P.O. Box 6031 Pasadena, Texas 77506
- [] Mr. Henry H. Branham, Acting Chief Bureau of Air Quality Control DEPT. OF HEALTH AND HUMAN SERVICES 7411 Park Place Houston, Texas 77087
- [] Walter C. Bosworth, Ph.D., Director IRVING DEPARTMENT OF HEALTH 825 West Irving Blvd. Irving, Texas 75060
- [] Mr. Steven L. Bacchus Director/Utilities CITY OF LEWISVILLE 151 West Church Street Lewisville, Texas 75067
- [] Mr. Dale Allred, R.S. Environmental Health Officer CITY OF NACOGDOCHES P.O. Box 648 Nacogdoches, Texas 75961

- () Charles D. Bessire, M.D., Director PASADENA CITY HEALTH DEPT. P.O. Box 672 Pasadena, Texas 77501
- [] Mr. Robert Galvan
 Director of Environmental Health
 CITY OF RICHARDSON
 P.O. Box 309
 Richardson, Texas 75080
- [] Mr. Bill Lewis, City Administrator CITY OF SUGAR LAND P.O. Box 110 Sugar Land, Texas 77598
- () Mr. Al Holguin, City Administrator CITY OF WEBSTER 311 Pennsylvania Webster, Texas 77598
- [] Mr. Coolidge Threadgill, Director Air and Water Pollution Control Program WICHITA FALLS-WICHITA COUNTY PUBLIC HEALTH DISTRICT 1700 Third Street Wichita Falls, Texas 76301-2199

INTERSTATE PROGRAMS:

- [] Mr. Paul Neans, Director ARKANSAS DEPT. OF POLLUTION CONTROL AND ECOLOGY P.O. Box 9583 Little Rock, Arkansas 72209
- [] Mr. Mike McDaniel
 Assistant Secretary
 OFFICE OF ENVIRONMENTAL AFFAIRS
 P.O. Box 44006
 Baton Rouge, Louisiana 70804
- [] Mr. Michael J. Burkhart NEW MEXICO ENVIRONMENTAL IMPROVEMENT AGENCY P.O. Box 968 Santa Fe, New Mexico 87504-0968
- [] Mr. John W. Drake
 Chief, Air Quality Service
 OKLAHOMA STATE DEPT. OF HEALTH
 P.O. Box 53551
 Oklahoma City, Oklahoma 73152

04/90

Johnson Controls R-2417

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X × .003 hr load

Pm (Table 7.15-1-AP-42)

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Caster uses natural gas nated at 450,000 btv/hr = 450 fr 24-5-50 = 6000 nr/yr

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Johnson Controls, Inc. Battery G 5757 N. en Bay Avenue Post Office Box 591 Milwaukee, WI 53201-0591 Tel. 414/228 1200



Ms. Rita Blackstock TACB 6330 Hwy. 290 East Austin, TX 78723

June 22, 1990 RECEIVED

Dear Ms. Blackstock:

Johnson Controls, Inc. - Garland, TX Permit Continuance #R-2617

As you requested in our phone conversation of June 22, 1990:

- 1. The grid caster uses natural gas with a liquid propane stand-by. The caster is rated at 450,000 BTU/Hour.
- 2. The process description from AP-42 is enclosed. Please note that our actual stack testing has demonstrated significantly lower emission rates.
- 3. The grid caster has one lead pot and three molding stations. This caster is identical to the Toledo caster for which the stack test was submitted.

If you have any questions, call me at 414/228-2650.

Sincerely,

JOHNSON CONTROLS, INC.

Mark R. Ishihara

Environmental Engineer

MRI/s

cc: D. J. Cooper

7.15 STORAGE BATTERY PRODUCTION

7.15.1 Process Description

Lead acid storage batteries are produced from lead alloy ingots and lead oxide. The lead oxide may be prepared by the battery manufacturer or may be purchased from a supplier. See Section 7.16.

Lead alloy ingots are charged to a melting pot, from which the molten lead flows into molds that form the battery grids. Pasting machines force a paste into the interstices of the grids, after which they are referred to as plates. The grids are often cast in doublets and split apart (slitting) after they have been pasted and cured. The paste is made in a batch type process. Mixing lead oxide powder, water and sulfuric acid produces a positive paste, and the same ingredients in slightly different proportions plus an expander (generally a mixture of barium sulfate, carbon black and organics) make the negative paste.

After the plates are cured, they are sent to the three process operation of plate stacking and burning and element assembly in the battery case. Doublet plates are cut apart and stacked in an alternating positive and negative block formation, with insulators between them. These insulators are of materials such as wood, treated paper, plastic or rubber. Then, in the burning operation, leads are welded to tabs on each positive or negative plate. An alternative to this operation is the cast-on strap process, in which molten lead is poured around the plate tabs to form the connection, and positive and negative terminals are then welded to each such connected element. The completed elements are assembled in battery cases either before (wet batteries) or after (dry batteries) the formation step.

Formation is the immersing of plates in a dilute sulfuric acid solution and the connecting of positive plates to the positive pole of a direct current (dc) source and the negative plates to the negative pole of the dc source. In the wet formation process, this is done in the battery case. After forming, the acid is dumped, fresh acid is added, and a boost charge is applied to complete the battery. In dry formation, the individual plates may be formed in tanks of sulfuric acid before assembly. Also, they may be assembled first and then formed in tanks. The formed elements from either method are then placed in the battery cases, and the batteries are shipped dry. Figure 7.15-1 is a process flow diagram for lead acid battery manufacture.

Defective parts are either reclaimed at the battery plant or are sent to a secondary lead smelter (See Section 7.11). Lead reclamation facilities at battery plants generally are small pot furnaces. Approximately 1 percent of the lead processed at a typical lead acid battery plant is recycled through the reclamation operation.

Lead acid storage battery plants range in production capacity from less than 500 batteries per day to about 10,000 batteries per day. Lead acid storage batteries are produced in many sizes, but the majority is produced for use in automobiles and falls into a standard size range. A standard

TABLE 7.15-1. STORAGE BATTERY PRODUCTION EMISSION FACTORS a

	Particulate	Lead	Emission Factor Rating	
Process	kg(lb)/10 ³ batteries	kg(15)/10 ³ batteries		
Grid casting	1.42 (3.13)	0.35 (0.77)	3	
Paste mixing	1.96 (4.32)	1.13 (2.49)	В	
Lead oxide mill (baghouse outlet) b	0.05 (0.11)	0.05 (0.11)	С	
Three process operation	42.0 (92.6)	4.79 (10.6)	3	
lead reclaim furnace ^C	3.03 (6.68)	0.63 (1.38)	3	
Ory formation ^d	14.7 (32.4)	NA	В_	
Total production	63.2 (139)	6.94 (15.3)		

References 1-7. NA = not applicable. Based on standard automotive batteries of about 11.8 kg (26 lb) of lead, of which approximately half is present in the lead grids and half in the lead oxide paste. Particulate emissions include lead and its compounds, as well as other substances. Lead emission factors are expressed as emissions of elemental lead.

Reference 5. Emissions measured for a well controlled facility (fabric filters with an average air:cloth ratio of 3:1) were 0.025 kg (0.055 lb) particulate/1000 batteries and 0.024 kg (0.053 lb) lead/1000 batteries. Factors represent emissions from a facility with typical controls (fabric filtration with an air:cloth ratio of about 4:1). Emissions from a facility with typical controls are estimated to be about twice those from a well controlled facility (Reference 1).

Based on the assumption that about 1% of the lead processed at a typical battery plant is processed by the reclaim operation.

dFor sulfates in aerosol form, expressed as sulfuric acid, and not accounting for water and other substances which might be present.

battery contains about 11.8 kilograms (26 lb) of lead, of which about half is present in the lead grids and half in the lead oxide paste.

7.15.2 Emissions and Controls $^{1-7}$

Lead oxide emissions result from the discharge of air used in the lead oxide production process. In addition, particulate matter and lead particulate are generated in the grid casting, paste mixing, lead reclamation, three process operations, and other operations such as slitting and small parts casting. These particulates are usually collected by ventilation systems to reduce employee exposure to airborne lead. Sulfuric acid mist emissions are generated during the formation step. Acid mist emissions are significantly higher for dry formation processes than for wet formation processes, because wet formation is conducted in battery cases, while dry formation is conducted in open tanks. Table 7.15-1 presents average uncontrolled emission factors for grid casting, paste mixing, lead reclamation, dry formation, and three process operations, and an average controlled emission factor for lead oxide production. The particulate emission factors presented in the Table include lead and its compounds. The lead emission factors represent emissions of lead in element and compound form, expressed as elemental lead.

A fabric filter is used as part of the process equipment to collect product from the lead oxide facility. Typical air to cloth ratios of fabric filters used for this facility are about 4 to 1. It is estimated that emissions from a facility controlled by a fabric filter with a 3 to 1 air to cloth ratio are about 50 percent less than those from a facility with a typical collection system. ¹

Fabric filters can also be used to control emissions from slitting and three process operations. The paste mixing operation consists of two phases. The first, in which dry ingredients are charged to the mixer, results in major emissions of lead oxide and is usually vented to a baghouse. For the second phase of the cycle, when moisture is present in the exhaust stream, the paste mixer generally is vented to an impingement scrubber. Grid casting machines are sometimes vented to an impingement scrubber. Lead reclamation facilities generally are also vented to impingement scrubbers.

Emission reductions of 99 percent and above can be obtained where fabric filtration is used to control slitting, paste mixing and three process operations. Application of scrubbers to paste mixing, grid casting and lead reclamation facilities can result in emission reductions from 85 percent to over 90 percent.

Wet formation processes usually do not require control. Emissions of sulfuric acid mist from dry formation processes can be reduced by over 95 percent with mist eliminators. Surface foaming agents are also used commonly in dry formation baths to control acid mist emissions.

References for Section 7.15

1. Lead Acid Battery Manufacture - Background Information for Proposed Standards, EPA 450/3-79-028a, U.S. Environmental Protection Agency, Research Triangle Park, NC, November 1979.



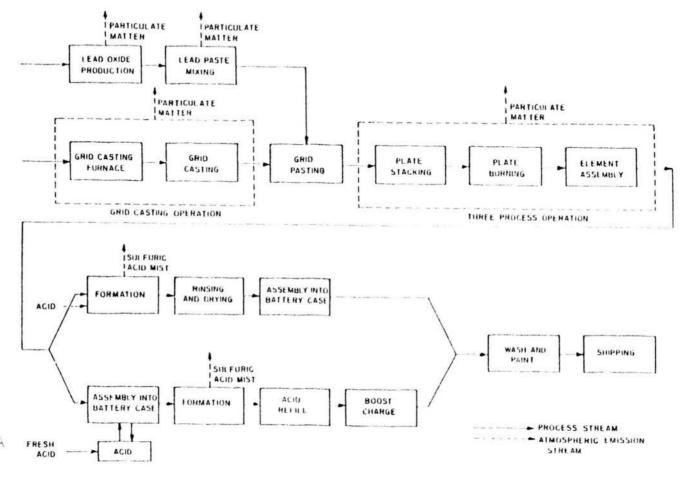


Figure 7.15-1. Process flow diagram for storage battery production.

- 2. Source Test EPA-74-BAT-1, U.S. Environmental Protection Agency, Research Triangle Park, NC, March 1974.
- Source Testing of Lead Acid Battery Manufacturing Plant Globe-Union. <u>Inc., Canby, OR</u>, EPA-76-BAT-4, U.S. Environmental Protection Agency, Research Triangle Park, NC, 1976.
- 4. R.C. Fulton and G.W. Zolna, <u>Report of Efficiency Testing Performed April 30, 1976</u>, on American Air Filter Roto-Clone, Spotts, Stevens and McCoy, Inc., Wyomissing, PA, June 1, 1976.
- Source Testing at a Lead Acid Battery Manufacturing Company ESB, Canada, Ltd., Mississauga, Ontario, EPA-76-3, U.S. Environmental Protection Agency, Research Triangle Park, NC, 1976.
- 6. Emissions Study at a Lead Acid Battery Manufacturing Company ESB, Inc., Buffalo. NY, EPA-76-BAT-2, U.S. Environmental Protection Agency, Research Triangle Park, NC, 1976.
- Test Report Sulfuric Acid Emissions from ESB Battery Plant Forming Room, Allentown, PA, EPA-77-BAT-5. U.S. Environmental Protection Agency, Research Triangle Park, NC, 1977.

Date of Investigation:

05/08/90

County: Portable: Dallas No

Investigation No:

526083A

Type:

No Permit

COMPANY INFORMATION:

Company Name: Account No.:

Johnson Controls, Inc./Battery Division

DB-0411-W

Location:

1111 Shiloh Road

Garland

Mailing Address:

P. O. Box 461729

Garland, Texas 75046-1729

Mgr. Name:

Title: Phone No. David Cooper

Mgr. of Engineering

214/494-2461

Jurisdiction:

Account Status: Account Size: 080 AA

AA

80 **1**

INVESTIGATION DATA:

Contact Name:

Title:

Phone No:

Same

VIOLATIONS:

Rule Number

Description

COMPLAINTS:

Log Number

PERMITS:

Permit No.

R-2617(renewal)

Regional Engr. Eddie Mack Austin Engr. Rita Blackstock

SAMPLING:

Type of Sample

Comments

Investigator:

Approved by:

Date:

6/1/90

May 08, 1990
Dallas County, Page 2
Johnson Controls, Inc./Battery Division

COMMENTS:

This investigation was conducted to provide a basis for comments on the company's application for the continuance of Permit R-2617, originally issued on 10/23/75. This company manufactures Diehard and Interstate automobile batteries. Permit R-2617 covers a Wirtz grid caster, in which the lead battery cell grids are cast. Mr. David Cooper, Manager of Engineering, provided a plant tour. No obvious emission problems were observed. However, it should be noted that there is residential housing immediately across Shiloh Road to the east, northeast, and southeast beginning at less than 300 feet, and there is a daycare center less than 1000 feet to the south-southeast. The nearest public schools are the Walnut Glen Elementary School located approximately 4000 feet to the northwest and the Williams Elementary School located approximately 3800 feet to the southeast. Mr. Cooper agreed to provide a complete copy of the sampling report submitted with the permit continuance application (subsequently received 5/11/90).

RECOMMENDATION:

Make comments on the continuance when requested.

77.70

Johnson Controls, Inc.
Battery Johnson Controls, Inc.
Battery



Ms. Rita Blackstock TACB 6330 Hwy. 290 East Austin, TX 78723

June 7, 1990

Dear Ms. Blackstock:

RE: Johnson Controls, Inc. - Garland, TX Permit Continuance #R-2617

As you requested in your letter of May 14, 1990, I submit the following information:

- 1. Map is attached.
- 2. Wirtz lead grid casting machine
 - a) 1 lead pot (1' x 1.4' x 12')
 - b) 600 lbs./hr. of lead average 1,000 lbs./hr. of lead maximum 1,800 tons/year of lead
- 3. Toledo caster 846.4 lbs./hr. of lead (attached)

I believe this answers all of your questions, but call me at (414)228-2650 if additional information is needed.

Sincerely,

JOHNSON CONTROLS, INC.

M. R. Ishihara

Environmental Engineer

Battery Division

cc: D. J. Cooper

CONIKER

144			1
Subject	(rid Cosin Passing Seal Tests 1/3/89	BYMAI	PAGE
	<u></u>		22
	Tork 00		
		*	
	Gid Cours		
	14 300 Panels 24 32,600 Panels		
	7.1. 32,600 panels		
	/	**	
,	56,900 panels /16 hours	96	
	· · · · · · · · · · · · · · · · · · ·	2 31.4	
	56,900 gards x 0.119 lbs grid	x 2 4 1/	uic i
	10 100 3		
	13,542.2 5 ds/16 hors	month &	
	= 846.4 1b. /hor		
	- 6,0:1	- ; ·	
	Fasting		
	115,439 #/16 hours		
	(15, 101 // 10 mm - 11 /)		
	7,214 16/hour	1	

.....



December 27, 1988

Mr. Jeffrey H. Tweddle City of Toledo Division of Environmental Services 26 Main Street Toledo, OH. 43605

Dear Mr. Twaddle:

Following are the production quantities realized during the stack testing conducted on 12/20/88 and 12/21/88.

Location Date

Production/Shift

lst

2nd

3rd

12/20/88

Grid Casting 24,300

32,600 27,500

Total Oxide Used

12/21/88

Paste Mixing

115,439#

Please let me know if we can be of further assistance.

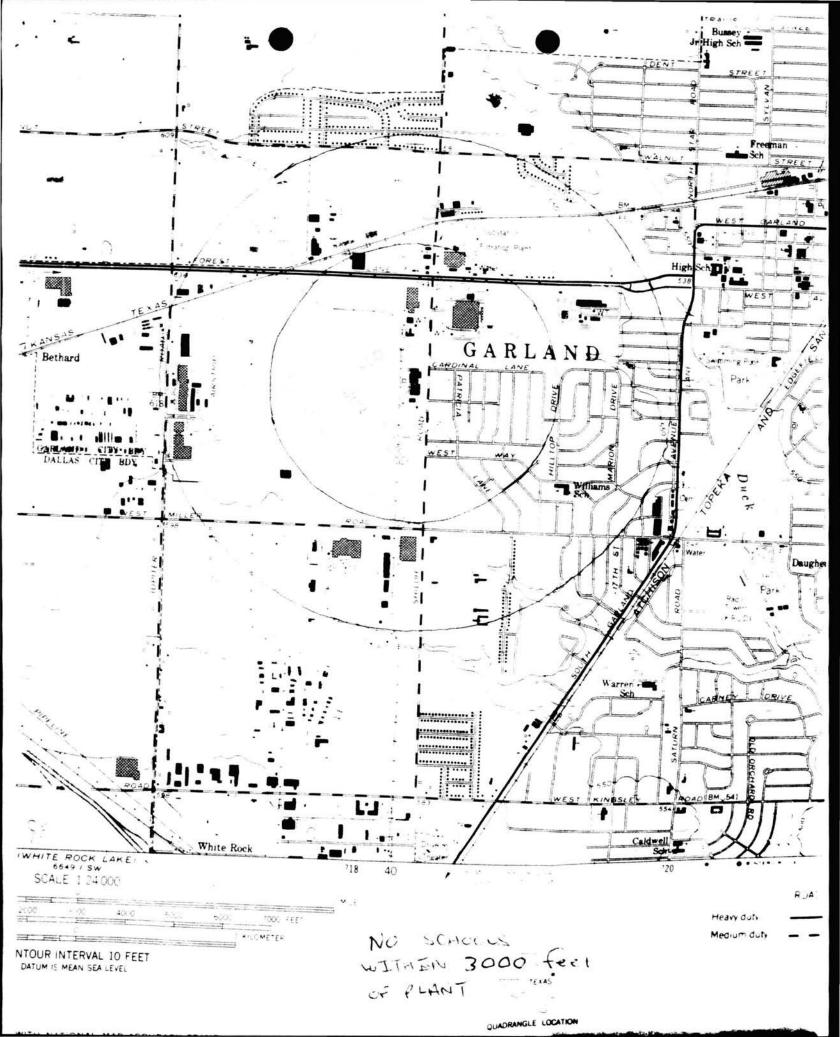
Sincerely.

Wil . (20 11/2000) Pete Quinlan

Engineering Manager

cc: Mark Ishihara Keith F. Wandel!

Pa/sf



TEXAS AIR CONTROL BOARD ROUTE SLIP

Approval	For your information
Review	Per conversation
Signature	Please discuss
Comment	Please return
As requested	Necessary action
Prepare reply for sig	nature of
	Controls R-2617 conti

DATE:

environmental testing inc.

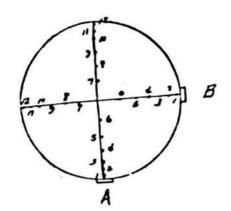
LOCATION OF SAMPLING POINTS

The dimensions of the stack and the location of the sampling points are shown in Figure 2. The stack cross section was divided into 24 equal areas. The ports were labeled A and B. Each point was sampled for a period of 7.5 minutes per point which yielded a total test time of 180 minutes per run. The number of sampling points was determined by the distance from the last disturbance in the gas flow as outlined in Method 1, Federal Register, Volume 48, No. 191, 30 September 1983.

RECEIVED

MAY 21 1990

ENTERT MENT PROGRAM



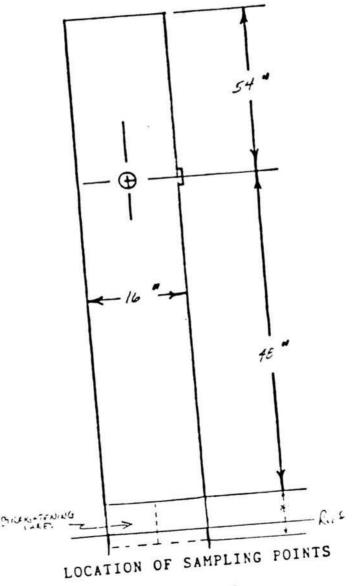


Figure 2

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SAMPLING AND ANALYTICAL PROCEDURES

All sampling and analytical procedures used were those recommended by the U.S. Environmental Protection Agency and the Ohio EPA. The results of the source test samples agreed within ±5% between Atomic Absorption Spectroscopy and the "Method of Standard Additions". Therefore, results used in the calculations were those obtained by Atomic Absorption Spectroscopy.

Complete details are found in Appendix E which is a copy_of the Federal Register, Volume 42, Number 160, dated 18 August 1977, the Federal Register, Volume 48, No. 191, 30 September 1983 (Methods 1 through 4), and the Federal Register, Volume 47, Number 74, 16 April 1982 (Method 12), and Perkin Elmer Corporation Manual (Citation 9.4).

Sample point locations and velocity measurements were made by Methods 1 and 2. Gas composition was determined by Fyrite and Method 3 on continuous bag samples. Method 12 was used for the lead concentration determination.

APPENDICES

Appendix A

Summary of Method 12 Lead Results

Johnson Controls Inc. Toledo Ohio Grid Caster Bank 8

Run Num	ber	1	2	3
Date		12/20/88	12/20/88	12/20/88
DN	Sample nozzle dia., in.	0.302	0.302	0.302
TT	Net time of test	180	180	180
РВ	Barometric pressure, in. Hg.	28.90	28.90	28.90
PM	Average orifice pressure drop, in. H2O	1.636	1.609	1.625
VM	Volume of dry gas sampled, cu. ft. at meter conditions	132.61	132.16	132.85
TM	Average gas meter temp. in degrees F.	96.29	107.90	110.46
VMSTD	Volume of dry gas sampled at standard conditions*, SCF	122.032	119.125	119.214
VW	Total water collected in impingers + silica gel, ML.	32.3	35.0	36.4
VMV	Volume of water vapor at standard conditions*, SCF	1.521	1.648	1.714
PMV	Percent moisture by volume	1.231	1.365	1.417
MD	Mole fraction dry gas	0.9877	0.9864	0.9858
PCO2	Percent CO2 by volume, dry	0.33	0.30	0.13
P02	Percent 02 by volume, dry	20.73	20.53	20.73
PCO	Percent CO by volume, dry	0.00	0.00	0.00
PN2	Percent N2 by volume, dry	79.13	79.17	79.13
MWD	Molecular weight-dry stack gas	s 28.935	28.869	28.847
MW	Molecular weight-stack gas	28.801	28.721	28.693
CP	Pitot tube coefficient	0.84	0.84	0.84
DPS	Average velocity head of stack gas, inches water	0.4348	0.4307	0.4336
TS	Average stack temperature, F	143.42	146.04	145.79

environmental testing inc

PSI	Static pressure of stack	-0.011	-0.011	-0.011
	gas, inches Hg.	22 200	28.889	28.889
PS	Stack pressure, absolute	28.889	erromania de la compo	
VS	Average stack velocity, FPM	1595.5	1586.2	1597.3
	Stack area, inches sqrd.	201.1	201.1	201.1
AS		1866.2	1844.7	1857.4
QS	Stack flow rate, dry, standard conditions, DSCFM	1000.2		
osw	Stack flow rate, wet, standard conditions, WSCFM	1889.5	1870.3	1884.1
		2237.3	2224.2	2239.7
QA	Actual stack flow rate, ACFM			100.48
PERI	Percent isokinetic	102.37	101.09	
	Lead, Mg.	0.6185	0.4550	0.4340
FMF	122	0.781E-04	0.588 E-04	0.561E-04
CAN	Lead, GR/DSCF		0.596E-04	0.569E-04
CAM	Lead, GR/WSCF	0.790E-04		
CAT	Lead, GR/ACF	0.651E-04	0.488E-04	0.465E-04
		0.125E-02	0.930E-03	0.892E-03
CAW	Lead, LB/HR	0.295E-02	0.220E-02	0.211E-02
CAZ	Lead, LB/TON			24
FNP	Net sampling points	24	24	
RW	Process weight, tons/hr	0.423	0.423	0.423

^{*68} Degrees F. 29.92 Inches Hg.

Method 12 Lead Calculations Test Number 1

Johnson Controls Inc. Toledo Ohio Grid Caster Bank 8

Volume of Dry Gas Sampled at Standard Conditions 17.64 * VM * (PB + PM / 13.6) VMSTD =	122.032
Volume of Water Vapor at Standard Conditions VMV = 0.04709 * VW =	1.521
Percent Moisture in Stack Gas 100 * VMV PMV = = VMSTD + VMV	1.231
Mole Fraction of Dry Gas 100 - PMV MD == 100	0.9877
Average Molecular Weight of Dry Stack Gas MWD = 0.44 * PCO2 + 0.32 * PO2 + 0.28 * (PN2+PCO) =	28.935
Molecular Weight of Stack Gas MW = MWD * MD +18 * (1-MD) =	28.801
Stack Gas Velocity at Stack Conditions VS = 5129.4 * CP * DPS * SQRT(TS + 460)/(PS * MW) =	1595.5
Stack Gas Volumetric Flow at Standard Conditions, Dry 0.123 * VS * AS * PS * MD QS = = TS + 460	1866.2
Stack Gas Volumetric Flow at Stack Conditions QS * (TS + 460) QA = = 17.64 * PS * MD	2237.3
Percent Isokinetic 1039 * (TS + 460) * VMSTD PERI =	102.37

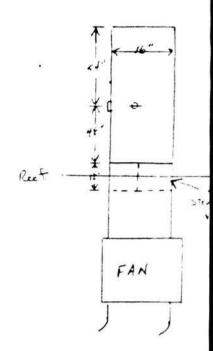
Lead Loading Probe, Cyclone, Filter, Impingers (At Standard Conditions) CAN = 0.0154 * FMF / VMSTD =	0.781E-04
Lead Loading Probe, Cyclone, Filter, Impingers (At Stack Conditions) (At Stack Conditions)	0.651E-04
CAT =TS + 460	
Lead Lb/Hr Probe, Cyclone, Filter, Impingers (At Standard Conditions) CAW = 0.00857 * CAN * QS =	0.125E-02
Lead Lb/Ton Probe, Cyclone, Filter, Impingers (At Standard Conditions) CAZ = CAW / RW =	0.295E-02

APPENDIX B

FIELD DATA

TRAVERSE POINT LOCATION FOR CIRCULAR DUCIS

	utrols Total Chic
Date Desember	
Sampling location	Crid Caster Bunk &
Inside of far wall of nipple (I)	to outside 23, 5
Inside of near wal nipple (nipple le	1 to outside of ength) (I) 7.5
Stack I.D. (I-T)	16.0
Nearest upstream d	isturbance <u>3,375</u> dd
Nearest downstream	disturbance 3.0 dd
Calculated by	00-



SCHEMATIC OF SAMPLING LOCATION

1	2	3	<u> </u>		
TRAVERSE POINT BURBER	FRACTION OF STACE ID	STACE ID	PRODUCT OF COLUMNS 2 AND 3 (TO REARLEST) 9 INCH;	NIPPLE LENGTH	TRAVERSE POINT LOCATION FROM DUTSIDE OF RIPPLE ISLEM DF COLUMNS 4 & 5-
1	C.(21	16	0.336	7.5	8.000
2	0.667		1.072		8.572
3	6.118		1.886		9,388
4	0.177		2.832		10.332
5	0.250		4.000	ĺ	11.500
Ŀ	0.356		5.696		13.196
7	0.644	i	10.304		17.80+
ç	1.750		12.000		19.500
9	C. 823		13.108		20.668
10	0.882		14.112		21.61.2
//	0.933		14.928		21, 428
12	5.979	¥	15.46+		23.164

METHOD 2 GAS VELOCITY AND CYCLONIC FLOW DETERMINATION

Plant and City Johnan Centrels Toledo Chic Run Date 12-20-88
Sampling Location Grid Caster Bank 8 Clock Time 0740
Run Number _ Operator PRJ-RHL-RDM Amb. Temp., °F 40
Bar. Press., in. Hg28.90 Static Press., in. H ₂ 00.15
Stack Press., in. Hg 28.889 Static Press., in. Hg -0.011
Stack Dimension, in Diam. or side 1 16.0 side 2
Pitot Tube (Cp) Pitot Tube Leak Check <0.1 @ in. H20

		Velocity			Cyclonic flow determination				
Traverse point number	Position, in.	he	ad s),	Stack OF	temp.,	Δp _s ref	at 0° erence	whic	e (ª) h yields ill ∆p ß
	8.000	0.15	0.18	146	1 141	0.00	0.07	1 0	1 1
2	8.572	0.15	0.18	148	147	0.02	0.08	2	4
3	9.388	0 15	0.19	198	147	0.01	003) -
7	16.332	0.17	0.10	148	147	0.02	0.02	2	3
5	11.500	0.21	021	148	147	0.01	0.00	1	0
6	13.190,	0,22	0.26	149	147	0.07	c.cv	1	0
1	17.8.04	1.20	0.24	148	148	0.01	0.00		0
€	19.500	0.20	0.28	148	148	0.00	0.00	0	0
9	20.668	0.21	6.20	148	149	0.00	0.00	0	0
70	21,612	0.16	0.19	148	14	0.00	0.00	0	0
11	22.428,	0.15	0.15	149	144	0.00	0.00	U	0
12	23.164	0.09	0.10	148	/11	7.00	2.00	0	-
							 		
						+	 	1	+
			-						

Average of (c) must be < 10 degrees to be acceptable.

NOMAGRAPH DATA

$$\Delta H_{0} = \frac{1.86}{1.86} = T_{m} = \frac{160}{160} = \frac{270}{160} = \frac{P_{s}/P_{m}}{1.0} = \frac{1.0}{1.0} = \frac{1.13}{1.0} = \frac{D_{b}}{1.0} = \frac{1.45}{1.0}$$

$$\frac{\Delta P}{\Delta P} = \frac{0.30}{1.00} = \frac{1.50}{1.00} = \frac{2.30}{1.00} = \frac{1.0}{1.00} = \frac{1.13}{1.00} = \frac{1.13}{1.00}$$

METHOD 5 PARTICULATE FIELD DATA

THE AT ITS TOOLS ON MADE			NY AM
Plant John CH (autal) Telesk (force Bunk & Date 12-20-38	Leak Checks Beg @ 15. 0.009 End of 7. 0.004	Bar Press *Hg 28.90 Meter Box $\Delta H \oplus 1.96$ Y= 1.00 Assumed Tm, *F 100	Heater Box Setting, °F 250 Probe Tip Dia , in 9, 302 Probe Length 4'slass lined
	Pilot Tube 2010 @ 3.9 *H,O	Dry Bulb. *F 146	Probe Heater Setting
Sample Box No 1	€ € 0.10 g 3.8 •H,0	Wet Bulb. *F	Average Op 1.20 Op 0.22
Meter Box No /31/8	Static Pressure 0.15 *H ₂ O	Db - Wb, *F	Average OH 1.75 OH Rel
Filter No	Start 0759	Assumed Moisture % 2 %	Process Weight
Probe No 4	Finish 1102	Ps/Pm _ 1 . 0	Steam Load
Pilol Tube Cp / E.f.	Observer L TWANDLE Agency Office TA,	C Factor 1,13	Steam Pressure

Clock	Dry Gas	Manometer (△p)	16	lanometer 2H) H ₂ O	0,,0	s Temp *F	Pump Vacuum in Hg	Box Temp	Impinger Temp	Stack Temp		
Lime	Meter Cu FI	in H ₂ O	Desired	Actual	Inlet	Outlet	Gauge	•¢	•f	•4	% CO,	% 0,
_ C	420,90	0.28	2.40	2 40	71	65	3.3	230	48	140		
7/2	427.15	0.24	2.00	2,00	81	68	3.0	230	44	142		
15	453.11	0.23	1.96	1.96	83	70	3.0	235	45	143		
11/2	439,76	0.20	1.72	1.72	89	76	2.8	235	45	1/2		
30	444.19	0.20	1.72	1.72	99	79	2.9	250	46	140		
37/2	44962	0.21	1.80	1.80	101	81	3.0	255	47	14.3		
45	456.10	0.20	1.12	1. 72	104	83	3,0	260	48	144		
52/2	46.1.84	0.18	1,56	1.56	102	84	2.5	260	47	142		
60	46-7.23	0.19	1.63	1.63	100	83	3.6	265	48	144		
1.7%	472.75	0.18	1.56	1.56	106	84	25	265	49	143		
75		0.16	1.38	1.38	108	87	2.2	260	50	145		
F11/_	47341	0.15	/. 3D	1.30	108	89	2.2	260	51	143		ALL DE PERSONS
7.1.	485.35	0.15	1.30	1.30	100	90	2.4	255	50	1.12		
7:/2	493 31	0.15	1.30	1,30	106	90	2.4	255	51	145		
15		0.17	1.47	1.47		91	3.5	250	50	144		
.121/2	-	0 18	15	1.50	110	92	3.8			145		
30	508.98	0.21	180	1.80	115	94	3.2			145		
37/2	514.86	0.22	1.86	186	117	95	3.5	255	51	144		
47	510.78	0.21	1.80	1.80	119	97	3.5	360	51	144		
12/2	520.64	0.20	1.72	1.72	120	99	3.2		52	145		
1.1	53,2.35	2.20	1,72	1.72	120	120	3.2	260	52	145		<u> </u>
67/2	5.58.09	0.16	1.38	1.38	121	100	25,	255	52	144		
7.	543.53	0.15	1,30	1.30	118	99	3.4	255	53	143		
11/2	548.92	0.15	1.30	1.30	111	100	2.4	255	53	113		
20	153,51											
	0 7/2 1/2 1/2 30 37/2 45 52/2 60 61/2 75 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 11/2 15 16 17/2 17/2 17/2 17/2 17/2 17/2 17/2 17/2	0 420,90 7/2 420,90 7/2 427.15 15 433.11 21/2 439,76 30 444.19 31/2 449.62 45 454.10 52/2 461.64 60 467.23 61/2 473.15 75 473.15 71/2 493.31 15 498.21 12/2 563.54 307/2 514.36 47 520.64 61/2 538.69 75 51/2 538.69 75 51/2 538.69 75 51/2 538.69	0 420,90 0.28 7% 420,90 0.24 16 433.11 0.25 21% 439.76 0.20 30 444.19 0.20 37% 449.02 0.21 45 450.10 0.20 52% 461.64 0.18 60 467.23 0.19 67% 473.15 0.16 61% 472.75 0.18 75 473.15 0.16 61% 485.35 0.15 7% 493.31 0.15 15 493.31 0.15 15 498.21 0.15 15 498.21 0.15 15 498.21 0.15 15 498.21 0.15 37% 51%.36 0.21 37% 51%.36 0.21 37% 51%.36 0.21 31% 52.04 0.15 41% 53.35 0.10 41% 53.35 0.15 51% 548.92	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0 420,90 0.28 2.40 340 71 7/2 437.15 0.24 2.00 2.00 81 15 438.11 0.25 1.96 1.96 83 21/2 439.76 0.20 1.72 1.72 89 30 444.79 0.20 1.72 1.72 89 37/2 449.02 0.21 1.80 1.80 1.4 45 49.10 0.20 1.72 1.72 104 45 49.10 0.20 1.12 1.72 104 51/2 449.02 0.21 1.80 1.80 102 60 40.184 0.18 1.56 1.56 102 60 40.7.23 0.19 1.63 1.63 100 61/2 473.15 0.18 1.56 1.56 102 75 473.15 0.18 1.56 1.56 108 74 473.41 0.15 1.30 1.30 100 75 473.51 0.15 1.30 1.	C 420,90 0.28 2.40 3.40 71 65 7½ 437.15 0.24 2.00 2.00 81 68 16 433.11 0.25 1.96 1.96 83 70 21½ 439,76 0.20 1.72 1.72 89 76 30 444.19 0.20 1.72 1.72 89 76 31½ 447.62 0.21 1.80 1.80 1.4 81 45 456.10 0.20 1.72 1.72 104 83 5½ 46.10 0.20 1.72 1.72 104 83 5½ 46.10 0.20 1.72 1.72 102 84 60 46.723 0.19 1.63 1.63 100 83 67½ 472.75 0.18 1.5% 1.5% 106 84 75 473.15 0.18 1.30 1.30 108 89 7½ 473.31 0.15 1.30 1.30 100 90	C 420,90 0.28 2.40 2.40 71 65 3.3 7½ 427.15 0.24 2.00 2.60 81 68 3.6 16 433.11 0.25 1.90 1.90 83 70 30 21½ 439.76 0.20 1.72 1.72 89 76 2.8 30 444.19 0.20 1.72 1.72 89 70 3.0 37½ 449.02 0.21 1.80 1.80 1.4 81 3.0 45 450.00 0.20 1.72 1.72 104 83 3.0 45 450.00 0.20 1.72 1.72 104 83 3.0 45 450.00 0.20 1.71 1.72 104 83 3.0 50½ 460.00 0.20 1.71 1.72 104 83 3.0 60 46.723 0.18 1.56 1.56 1.63 100 83 3.6 75 473.15 0.18 1.50	C 420,90 0.28 2.40 2.40 71 65 3.3 230 7½ 427,15 0.24 2.00 2.00 81 68 3.0 230 15 433,11 0.25 1.96 1.96 1.96 83 70 30 235 21½ 435,76 0.20 1.72 1.72 69 76 2.8 235 30 444,79 0.20 1.72 1.72 1.97 79 79 3.9 250 37½ 449,10 0.20 1.72 1.72 1.64 83 3.0 255 45 45,10 0.20 1.72 1.72 1.64 83 3.0 256 45 45,10 0.20 1.72 1.72 1.64 83 3.0 256 45 45,10 0.20 1.72 1.72 1.64 83 3.0 256 50 45,10 0.18 1.50 1.50 1.60 84 2.5 260 50 472,13 <th< td=""><td>C 4720,90 0.28 2.40 2 40 2 40 71 65 3.3 230 48 7½ 421,15 0.24 2.00 2.10 81 68 3.0 230 49 1% 431,11 0.25 1.96 1.96 83 70 30 235 45 31% 435,76 0.20 1.72 1.72 89 76 2.8 235 45 30 44,19 0.20 1.72 1.72 89 76 2.8 235 45 31% 44702 0.21 1.60 1.80 1.1 81 3.0 255 47 45 49,100 0.20 1.72 1.72 104 83 3.0 260 48 31½ 40.10 0.20 1.72 1.72 104 83 3.0 260 48 45 40.10 0.20 1.72 1.72 104 83 3.6 265 48 41½ 40.10 0.18 1.50 1.50</td><td>C 420,90 0.28 2.40 3.40 71 65 3.3 230 48 140 7½ 437.15 0.24 2.00 3.00 81 68 3.0 230 44 142 16 438.11 0.25 1.90 1.90 1.90 81 68 3.0 230 44 142 16 438.11 0.25 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.91 81 3.0 255 45 142 30 449.17 0.20 1.72 1.72 1.91 81 3.0 255 45 142 31/2 449.02 0.21 1.80 1.80 1.91 83 3.0 260 48 144 31/2 449.02 0.21 1.80 1.80 1.80 2.5 2.60 47 1.42 60 4/2.</td><td>0 420,90 0.28 2.40 3.40 3.71 65 3.3 230 48 140 7% 9.21,15 0.24 2.00 2.00 81 68 3.0 235 44 142 16 433,11 0.25 1.90 1.96 83 70 3.0 235 45 113 31% 435,70 0.20 1.72 1.72 89 76 2.8 235 45 1143 31% 444,19 0.20 1.72 1.72 89 79 2.9 250 46 140 31% 447,19 0.20 1.72 1.72 1ef 83 3.0 255 47 143 45 49,10 0.20 1.72 1.72 1ef 83 3.0 255 47 143 45 49,10 0.20 1.72 1.72 1ef 83 3.0 255 47 143 45 49,10 0.20 1.72 1.72 1ef 83 3.0 255</td></th<>	C 4720,90 0.28 2.40 2 40 2 40 71 65 3.3 230 48 7½ 421,15 0.24 2.00 2.10 81 68 3.0 230 49 1% 431,11 0.25 1.96 1.96 83 70 30 235 45 31% 435,76 0.20 1.72 1.72 89 76 2.8 235 45 30 44,19 0.20 1.72 1.72 89 76 2.8 235 45 31% 44702 0.21 1.60 1.80 1.1 81 3.0 255 47 45 49,100 0.20 1.72 1.72 104 83 3.0 260 48 31½ 40.10 0.20 1.72 1.72 104 83 3.0 260 48 45 40.10 0.20 1.72 1.72 104 83 3.6 265 48 41½ 40.10 0.18 1.50 1.50	C 420,90 0.28 2.40 3.40 71 65 3.3 230 48 140 7½ 437.15 0.24 2.00 3.00 81 68 3.0 230 44 142 16 438.11 0.25 1.90 1.90 1.90 81 68 3.0 230 44 142 16 438.11 0.25 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.91 81 3.0 255 45 142 30 449.17 0.20 1.72 1.72 1.91 81 3.0 255 45 142 31/2 449.02 0.21 1.80 1.80 1.91 83 3.0 260 48 144 31/2 449.02 0.21 1.80 1.80 1.80 2.5 2.60 47 1.42 60 4/2.	0 420,90 0.28 2.40 3.40 3.71 65 3.3 230 48 140 7% 9.21,15 0.24 2.00 2.00 81 68 3.0 235 44 142 16 433,11 0.25 1.90 1.96 83 70 3.0 235 45 113 31% 435,70 0.20 1.72 1.72 89 76 2.8 235 45 1143 31% 444,19 0.20 1.72 1.72 89 79 2.9 250 46 140 31% 447,19 0.20 1.72 1.72 1ef 83 3.0 255 47 143 45 49,10 0.20 1.72 1.72 1ef 83 3.0 255 47 143 45 49,10 0.20 1.72 1.72 1ef 83 3.0 255 47 143 45 49,10 0.20 1.72 1.72 1ef 83 3.0 255

METHOD 5 PARTICULATE FIELD DATA

	METHOD SPANTICE	DEATE FILLD DATA	
Plant Jelinian Centrel's Totale Ch Run No 2 Location Crip! Cocker Bank & Date 12-20-88 Operator IEJ Fill P.A.M	Very Important — Fill In All Blanks Leak Checks Beg @ 15°		Ambient Temp. °F 48 Heater Box Setting, °F 250 Probe Tip Dia in 6.302 Probe Length 43/205 / nc.4 Probe Heater Setting 5.5°C
Sample Box No 2 Meter Box No 1112 Filter No A112 2 Probe No 5 Pitot Tube Cp C 5 4	Static Pressure - 0.15 "H ₁ O" Static 1/0 7 Finish 14/0	Wet Bulb. *F 75 Db - Wb. *F 7/ Assumed Moisture % 2 70 Ps/Pm 1.0	Average Op 0.20 Op 0.72 Average OH 1.75 OH Rel Process Weight Steam Load Steam Pressure

		Stack Temp	Impinger Temp	Box Temp	Pump Vacuum in Hg	s Temp F	Dry Ga	Hj	Onlice M. (A	Pitot Manometer (\Delta p)	Dry Gas Meter Cu Ft	Clock			Point
% 0,	₩ CO;	•¢	• F	• 6	Gauge	Outlet	Inlet	Actual	Desired	in H ₂ O		Time	Point		
		145	42	225	4.5	96	106	2,19	2.19	0.25	543,80	0	4!		
		145	45	225	1.2	98	114	1.96	1.96	0.23	659 63	2.3	2		
		141	46	225	4.2	98	115	1.96	1.96	0 23	526.14	15	3		
		145	46	225	40	98	117	1.80	1.80	0.21	573,16	• • • •	4		
		143	47	2.30	40	98	119	1.80	1.80	0.11	578,05	32.	5		
		146	47	230	3.8	98	120	1.72	1.72	0.20	53197	370	(
		145	48	230	10	99	119	1.72	1.72	0.20	584.67	45	7		
		145	48	235	3.7	99	119	156	1.50	0 18	596 11	1212	Ç		
		137	48	240	3.7	98	118	1.47	1.41	0.17	6.00 99		4		
		146	49	240	3,5	98	119	1.18	1:38	0.16	6.06 38	. 7. 2	10		
		146	51	245	3.7	99	119	1.38	1,38	0.16	611.48	75	"		
		147	51	245	3,5	100	119	1.30	1.30	0.15	616.83	821/2	13		
		147	51	250	35	97	110	1.30	1. 30	0.15	621.67	90%	1		
		147	5 3	235	3,5	99	114	1.30	1.30	0.15	626.72	12	ż		
		147	51	240	3.5	99	116	1.47	1.47	017	631.71	15	3,		
		146	53	245	4.0	100	117	1.72	1.72	020	636.87	22%	4		
		146	53	215	4.3	100	119	1.72	1.72	0.20	641.99	32	5		
		147	52	215	4.5	100	119	1.80	1.80	0.21	647.76	37/	(
		148	53	240	4.5	101	120	1.80	1.80	0,21	653.62	1.17	7		
		116	53	240	73	101	118	1,72	1.72	0.20	6.54.48	5211.	8'		
		146	54	240	7.2	101	118	1.56	1.52	0.18	665.22	1.1.	4		
		147	54	249	4.0	101	116	138	1.38	0.16	670.76	17/2	10		
		148	54	240	3.5	100	116	1.30	1,30	0.15	675.70	75	11		
		146	55	240	3.5	100	114	1.30	130	0.15	681. of	42/2	12		
1											685.90	70	•		

METHOD 5 PARTICULATE FIELD DATA

20 I			
Plant Jehren Cantlet Tilete Chi	v	10.4.45	Ambient Temp , •F
Run No	Very Important — Fill In All Blanks		Heater Box Selling, °F
Location Coul Carti Com/ E	Leak Checks Beg @ 15 C. 012	Meter Box AHW 1.86 Y- 1.00	Probe Tip Dia . in U. 302
Date 1: 21'55	End @ 5 - 2.00 8	Assumed Tm, *F	Probe Length 4' 5/455 / Land
Operator 125-111-18M	Pilot Tube (Co. 1 @ 4,2 .H,0	Dry Bulb. •F	Probe Heater Setting 85%
Sample Box No	0 cc.1 @ 4.2 . HO	Wel Bulb, *F 75	Average Op 0.20 Op C. ZZ
Meter Box No _/ i-/f	Static Pressure -0.15 *H,O	Db · Wb . •F	Average OH / 75 OH Ref
Filter No	Start: 1421,	Assumed Moisture % 290	Process Weight
Probe No 6 /	Finish 1724	Ps/Pm	Sleam Load
Pitot Tube Cp CE	Observer I, TWADDLE Agency Obje TA	C Factor /./-7	Steam Pressure
	Chart Istate		

	Ciock	Dry Gas	Pitot Manometer (\Delta p)	Onlice M (A) in)			s Temp F	Pump Vacuum in Hg	Box Temp	Impinger Temp	Stack Temp	1 A 10 P 10 C 10 V - 10 2 1 L - 1	
Point	Time	Meler, Cu Ft	in H ₂ O	Desired	Actual	Inlet	Outlet	Gauge	•f	•f	•¢	⇔ co,	% 0,
11	1	6.86.20	0.25	2.19	2.19	104	99	5.0	225	49	147		
.2	7/2	693.51	0.23	1.96	1.96	112	99	4.8	225	49	177		
3	15	698.77	0.22	1.86	1.86	115	98	4.5	2.25	50	146		
4	121/2	704.71	0.21	1.80	1.80	117	99	4.3	225	50	147		
5	30	710.59	0.22	1.86	1.86	119	99	4.	225	50	147		
4.	31/2	711.52	0.22	1.86	1.86	120	100	4.5	230	52	147	And a final transit and	
7	45	722.43	0.21	1.80	180	120	101	4.4	235	53	145		
8	501/2	728.32	0.19	1.63	1.63	120	101	4.2	245	54	146		
9	11	733.90	0.17	1.47	1.47	120	103	3.5	145	54	147		
11.	67/2	739. 10	0.16	1.38	1.38	119	103	1.3	260	55	145		
11	7:	744.21	0.16	1.38	1.38	118	103	3.3	270	5%	145		
12	6:1/2	749.31	0.15	1.30	1.30	118	103	3,1	265	5%	146		
131	Col.	75.1.36	0.17	1,47	1.17	112	102	3,8	260	57	146		
2	7:1-	75965	0.17	1.47	1.47	116	102	3.8	260	57	145		
3	15	76487	0.18	1.56	1.56	118	102	40	255	57	145		
4	25%	770.19	0.19	1.63	1.63	120	103	4.2	255	58	146		
7	Ŷ	775.76	0.20	1.72	1.78	120	104	4.4	255	58	115		
6	37/2	781.50	0.22	1.86	1.86	121	104	4.7	255	59	146		
7	45	78724	0.22	1.80	1.86	124	106	4.7	255	59	146)
2	521/2	743.17	6.18	1.56	1.56	124	106.	40	255	60	142		
9	41	798.59	0.17	1.47	147	124	106	38	255	57	144		
10	67%	80188	0.15	1.30	1.30	122	104	3.5	255	50	145		
11	75	808 97	0.15	1.30	1.30	122	107	3,5	355	56	145		
1:	621/2	81400	0.15	1.30	130	123	104	3.6	250	56	144		

METHOD - ORSAT AND DRY MOLECULA WEIGHT DETERMINATION

	1	1 1 1	-1	, ,,	0.20			1	10.0		
Plant Johnson Centrils Telest Chic Sample Location Crid Coster from											
Sample Type - Continuous Pump Leakfree @ 10" ?											
Oxygen Check 20.9% ± 0.1% _20.7 Fuel Type											
Orsat Leak	Orsat Leak Check @ 4 min.: Pipet Levels - Leakfree ?										
				Bu	ret <u>/</u>	.1	14.1	_ = <	0.2 ml ? <u>/</u>		
									ū.		
Run No.	Run No Sample Date 12-20-88 Ambient Temp. °F										
Sampling T								alysi	s By RHL		
Gas	Actual	Nat	2 Actual	Not	Antwal	Vot	Avg.	Mult.	Molecular Wt.		
CO2			,		Š.				0., 20, 20		
02	6.3	6.3	6.4	24	6,3	1.3	6.33	भाग	0.1452		
	28	215	21.9	4.5	20 8	2.5	2.5	•32	6.5800		
co	20 8	1.1	21.9	11	2.5	0.0	0.0	-28	0.1000		
N2	100	792	100	79.1	100	79.2	79,17	•28	22.1676		
			A STATE OF THE STA	20	9-%0,			Tota	28.8928		
					9-%0, 600,						
Run No.	2	Samp:	le Dat	e <u>12</u>	2-20-88	_ Am	bient	Temp	· °F _48		
Sampling T:											
Gas			2		. 3		Avg.	M:1+.	Molecular Wt.		
Uas	Actual	Net	ACTIVAL	NOT							
CCC			ACCUAL	Net	Actual		8		Molecular Wt. Dry 1b/lb mole		
CO2	03	3.3	0.3	0.3	2, 3	Net .1.3	0 30	بليل	2. 320		
02									10.00 20.00		
	23	3, 3	0.3	\$. ₹	2,3	.3.3	9.35	بلبل	0.320		
02	03 219	2.5 20.6 20.0	0.3 20.8	0.3 2.5 0.0	0, 3 ,2c.8	2.5 2.5 0.0	0 30 20,53 0.00	•32	0.320 4.5696 0.000		
0 ₂	23 219 219	3.3 21.6	0.3 20,8 20,8 100	0.3 2.5 0.0 79.2	20.8 20.8 20.8 100-	2.5 2.5 0.0 75.2	0 sic 30.55	.32 .28	0.320 6.5696 0.0000 22.1676		
02 CO N2	0 3 21 9 21 9 100	2.5 2.6 2.0 79.1	0.3 20.8 20.8 100	0.3 2.5 0.0 79.2	20.8 20.8 20.8 100	2.5 2.5 0.0 79.2 V A	0 30 20.53 C.W. 74.17	.32 .28 .28 Tota	2.320 6.5696 0.000 23.1676 1 28.8692		
0 ₂	0 3 21 9 21 9 100	2.5 2.6 2.0 79.1	0.3 20.8 20.8 100	0.3 2.5 0.0 79.2	20.8 20.8 20.8 100	2.5 2.5 0.0 79.2 V A	0 30 20.53 C.W. 74.17	.32 .28 .28 Tota	2.320 6.5696 0.000 23.1676 1 28.8692		
02 CO N2	2 3 2 3 2 9 2 9 100	2.6 2.6 79.1	0.3 20.8 24.8 100	0.3 2.5 0.0 79.2 201	20.8 20.8 20.8 100.	2.5 2.5 0.0 75.2 (A	0 30 20.53 C W 75.17	.32 .28 .28 Tota	2.320 6.5696 0.000 23.1676 1 28.8692		
02 CO N2	03 219 219 100	2.6 2.6 79.1 Samp	0.3 20.8 24.8 100	0.3 2.5 0.0 79.2 - 20.8 e /2 ck)	20.8 20.8 20.8 100.	2.5 2.5 0.0 75.2 (A	20.53 C.W. 75.17 bient An	.32 .28 .28 Total	2.320 6.5696 0.0000 23.1676 1 28.8392 . °F 51 s By £H=		
CO N2 Run No. Sampling T	03 219 219 100	2.6 2.6 79.1 Samp	2.8 2.8 2.8 100 le Dat hr clo Actual	0.3 2.5 0.0 79.2 - 20.8 e /2 ck)	20.8 20.8 20.8 100. 2-80. 2-70. 1424-1 Actual	2.5 2.5 0.0 75.2 (A	20.53 C.C. 75.17 bient An	.32 .28 .28 Total	2.320 4.5496 0.0000 23.1676 1 28.8692 • F 5/ s By £H. Molecular Wt. Dry 1b/1b mole		
CO N2 Run No. Sampling T Run Gas	20 3 20 9 20 9 100 3 ime (2 Actual	2.6 2.6 75.1 Samp 4 -	20.3 20.8 20.8 100 1e Dat hr clo	0.3 2.5 0.0 79.2 - 20.8 e /2 ck)	2.8 2.8 2.8 100. 2-40. 2-20 18 142/- 1	2.5 0.0 75.2 (A Am 72.4	0 30 20.53 C.W. 75.17 bient	.32 .28 .28 Total Tempalysi	2.320 6.5696 0.0000 23.1676 1 28.8692 28.8692 3 By CHL Molecular Wt. Dry 1b/1b mole		
CO N2 Run No. Sampling T Gas CO2	03 219 219 100	2.6 2.6 79.1 Samp 4 -	2.8 2.8 2.8 100 le Dat hr clo Actual	0.3 2.5 0.0 79.2 	20.8 20.8 20.8 100. 2-80. 2-70. 1424-1 Actual	2.5 0.0 79.2 VA Am 72.4 Net	0 30 20.53 C.W. 74.17 bient An Avg.	.32 .28 .28 Total Tempalysi Mult.	2.320 4.5496 0.0000 23.1676 1 28.8692 • F 5/ s By £H. Molecular Wt. Dry 1b/1b mole		
CO N2 Run No. Sampling T Gas CO2 O2	20 3 20 9 20 9 100 3 ime (2 Actual 5 2 20 5	2.6 2.6 79.1 Samp 4 -	2.8 2.8 2.8 100	0.3 2.5 0.0 79.2 	20.8 20.8 20.8 100. 20.8 100. 20.8 1421-1 3 Actual	2.5 2.0 75.2 (A Am 72 \(\frac{1}{2} \) Net	0 30 20.53 C &c 79.17 bient An Avg. \$	July .32 .28 .28 Total Tempalysi Mult. July .32	0.320 6.5696 0.0000 23.1676 1 28.8692 0. °F 5/ s By £H_ Molecular Wt. Dry 1b/1b mole 0.00724 0.6336		
CO N2 Run No. Sampling T Cas CO2 O2 CO	20 3 20 9 20 9 100 3 ime (2 Actual 5 2 20 8 100	2.6 75.1 Samp 4 - Net	20.3 20.8 20.8 100 le Dat hr clo 2 Actual 20.5 100	0.3 2.5 0.0 79.2 e /2 ck) Net 2.5 Cl 79.1	20.8 20.8 20.8 100. 2-80 = 1 2-20 ×8 1421-1 3 Actual 20.4 20.4 20.4 20.4 100	2.5 2.5 2.0 75.2 (A Am 72 \(\frac{1}{2} \) 1.1 1.5 2.1 75.1	0 30 20.53 C &c 79.17 bient An Avg. C.13 C.13	July .32 .28 Total Tempalysi Mult32 .28	0.320 6.5696 0.0000 23.1676 1 28.8592/ 0. °F 5/ s By 6/4. Molecular Wt. Dry 1b/1b mole 0.0072/ 0.6336/ 10000		
CO N2 Run No. Sampling T Gas CO2 CO N2	20 3 20 9 20 9 100 3 ime (2 Actual 5 2 20 8 100	2.6 2.6 79.1 Samp 4 - Net	20.3 20.8 20.8 100 le Dat hr clo 2 Actual 20.5 100	0.3 2.5 0.0 79.2 e /2 ck) Net 2.5 Cl 79.1	20.8 20.8 20.8 100 20.8 100 20.8 1421-1 20.9 20.9	2.5 2.5 2.0 75.2 (A Am 72 \(\frac{1}{2} \) 1.1 1.5 2.1 75.1	0 30 20.53 C &c 79.17 bient An Avg. C.13 C.13	-1.11 -32 -28 -28 Tota Temp alysi Mult32 -28 -28	0.320 6.5696 0.0000 23.1676 1 28.8592 0. °F 5/ s By 6/4 Molecular Wt. Dry 1b/1b mole 0.0072 0.6336 0.600 0.600 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.		

METHOD 12 SAMPLE RECOVERY AND INT	EGRITY SHEET
Plant John M. Controls Toledo Chio Recovered Sample Location Grd Caster Frank 8 Recovery	Date_12-22-88
Run Number / Sample Date /2-2c-88 /2 2 Sample Box Number / Probe Number 4	2 3 2 -58 /2-21-85 2 3 5 5
MOISTURE DETERMINATION AND SAMPLE RECO	OVERY - IMPINGERS
Description of Water Liquid Level Marked Final Volume (wt.), ml 202.0	12-2 M12-3 tar
Silica Gel % Spent 20% 430 3 4	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Total Moisture, g 32.3	350 36.4
SAMPLE RECOVERY - FILTI	ZR -
	12-2 M12-3 Mach Mach
Probe Rinse Cont. Number M12-1 M	$\frac{12-2}{}$ $\frac{M12-3}{}$
SAMPLE WEIGHT CALCULATI	ON
Run # Conc., mg/1 x Vol., 1 - Blank, 1 2.474 x 0.250 - — 2 1.820 x 0.250 - — 3 1.736 x 0.250 - —	mg = Total mg Lead = 0.6185 = 0.4550 = 0.4340
BLANK CALCULATIONS	
Conc., mg/1 x Volume, 1 = Total color x 0.100 = color	MNO ₃ Blank
LABORATORY CUSTODY	
Received By: frs-rhe ram Date Received Stored and Locked: Remarks:	ed: 12/23/58 None

METHOD 12 ATOMIC ABSORPTION DATA

GRID CASTER BANK 8

CALIBRATION DATA

Standard	No.	1	=	0.500	1g/1	Absorbance	=	0.030
Standard	No.	2	=	0.250 m	ng/1	Absorbance	=	0.016
Standard	No.	3	=		ng/l	Absorbance	=	0.006
Standard								0.060
Standard					ng/l	Absorbance	=	0.119

SAMPLE CONCENTRATION DATA

Mean Concentration Run No. 1	= _	2.474	mg/l
Mean Concentration Run No. 2		1.820	mg/l
Mean Concentration Run No. 3	= _	1.736	mg/l
Mean Concentration Filter Blk. A	= _	(0.050	mg/l
Mean Concentration Filter Blk. B	= _	<0.050	mg/l
Mean Concentration 0.10N HNO	=	<0.050	mg/l

Analyzed	bу	PRJ	Date	December	29,	1988
Remarks:						

Run No. 1 sample was diluted 1:2

EPA OC 386 used for calibration check: true = 1.000

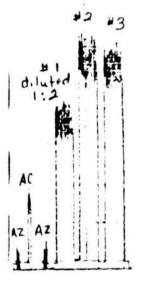
obtained = 0.987

Calibration recovery: 98.7%

Grid Caster Bank 8 - Runs 1, 2, & 3
Atomic Absorption Spectroscopy

			ACALC	
	STATIST	ics :		Run 2
	AUTO ZER	RO A		0002.
	аито сац	0.000	CON 01 02 03 04	1.838 1.816 1.815 1.832
	5TD 1		95	1.822
	ACT CON	0.500	96 97 98	1.828
	ORG CON	0.500	09	1.813
	HEW CON	0.500	10	1.793
	AUTO ZER		MEAN	1.820
	ACAL C	0.001	5D	0.014
	Rui	1.200	RSD ACALC	00.75
	02	1.244		Run 3 0003.
	03 04 05 06 07 08	1.236 1.210 1.250 1.238 1.238 1.237	CON 01 02 03 04 05	1.712 1.718 1.721 1.740
	09	1.244	96 · 97	13 - 15 TO TO 10 TO TO
	10	1.237	98	1.767
	MEAN	1.237	09 10	1.746 1.717
•	5D	0.011	MEAN	1.736
	RSD	00.85	5D	0.019
			RSD	01.07

AZ = Autozero Ac = Autocal. butien



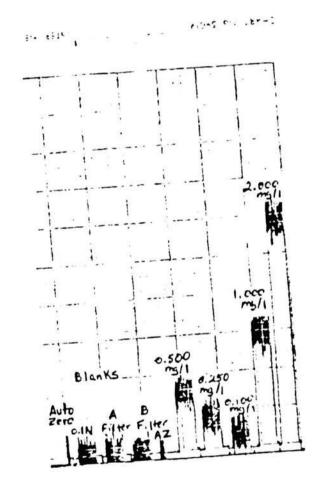
MAN AURITAGE RESORTED BATT

Method of Standard Additions - Matrix Check Grid Caster Bank 8 - Run #2 Comparison = 4.1%

CALIBRA	HOITI	· · · · · · · · · · · · · · · · · · ·	•	4	STATIST	ICS
AUTO ZE	RO A		- 1 · : -		ACALC	
	-0.001	2.000	ng]			0002.
STD 1					CON 01	
CON	2.000			,		-1.910 -1.901
51 G	0.062 0.059 0.059 0.059	#2+ Blank	- -		94 95 96 97 98	-1.894 -1.895 -1.889
	0.059 0.056 0.059				09 10	-1.889
	0.059 0.06 0			: 	MEAN	-1.894
×	0.060	1	S		5D	0.017
MEAN	0.059	Bi	ank		RSD	-00.92
APP CC	Н				y: e 115 ** 1804	12 6
STD 1	2.000					

environmental besting inc

O.100N HNO,, Filter A & Filter B Blanks Calibration Data - Strip Chart



7.5

O.100N HNO, Filter A & Filter B Blanks Calibration Data

CALIBRATION	AUTO ZER	₹0 A	v.	STD 4	į.		
AUTO ZEPO A	¥	0.001	1				
1010 2210	Calil	bration		CON	1.	. 000	mg 11
9.001	STD 1				1024		350
ACALC Abscrbance				5IG		. 060	
No.22 No.22	CON	0.500	m9/1			060	
Blank 0.100 N HN03	SIG	0.030				060	
0,111	514	0.031	1			. 060 . 060	
EXP F 1.000 ·		0.030				062	
I		0.031				060	
SIG 01 0.002		0.030				061	
02 0.001		0.030				061	
03 0.001		0.030			0.	060	
04 0.000		0.031			-		
05 -0.000		0.031		HEAN	0.	060	
06 0.000		0.031		STD 5			
07 0.001	MEAN	0.030		310 3	,		
08 0.000 09 0.001				CON	2.	.000	ma/1
10 0.000	5TD 2			••••	-		5
BCBLC I				SIG	0.	. 120	
Filter A Blank	CON	0.250	mg/1			. 120	
0.000						.119	
11 0.002	SIG	0.015				.118	
12 0.000		0.016				.119	
13 0.000 14 0.001		9.016	(4			.117	
14 0.001 15 0.001		0.016	36			.119	
16 -0.000		0.016				.119	
17 -0.001		0.016			9	.119	
18 0.000		0.016					
19 0.001		0.016		MEAN	0	.119	
20 0.000 BCALC		0.011		APP (CUN		
Filter B Blank	MEAN	0.016		the at	CON		
0 000	<u> </u>						
21 -0.001	5TD 3			STD			
22 -0.000	COH	0 100	* . II		0	.496	mg/1
23 -0.001	COM	0.100	mg 11	CTD :	_		
24 0.001	SIG	0.005		STD :		250	mg/1
25 0.000 26 -0.001		0.007			6	. 230	mg / I
27 -0.001		0.004		STD	3		
28 0.000		0.005				.093	meli
29 -0.000		0.005					•
30 -0.002		0.006		STD			
		0.007 0.006			1	.001	mg/1
		0.006			_		
	ż	0.006		STD		000	mg/I
		0.000 m (1000)			2	.000	יונייי

MEAN

0.006

ervironmental bestiling inc

ETI Quality Control Filter #1 - True 0.100 mg Obtained 0.0987 mg - % Recovery = 98.7%

	ACAL	.c			
			1.000	-	
	COH	01 02 03 04 05 06 07 08 09	0.996 0.989 0.985 0.997 0.965 0.994 1.001 0.987 0.976		
	MEAN		0.987		QC F
	5D		0.011		True : 0
RSD		D	01.11		6
					2360

GC Filter Spike

ETI 1.000 mg/1

True: 0.100 mg/1ciml

True: 0.100 mg/1citer

Clifained 0.987 mg/1

= 0.0987 mg/1citer

7. Receiving

98.79.

APPENDIX C

PROCESS DATA



December 27, 1988

Mr. Jeffrey H. Tweddle Division of Environmental Services 26 Main Street Toledo, OH. 43605

Following are the production quantities realized during the stack Dear Mr. Twaddle: testing conducted on 12/20/88 and 12/21/88. Production/Shift

Location 3 T d 2nd Date lst 32,600 27,500 24,300 Grid Casting 12/20/88

Total Oxide Used

115.439# Paste Mixing

Please let me know if we can be of further assistance.

Pete Quinlan Engineering Panager

cc: Mark Ishihara Keith F. Wandel!

ra/sf

CONTRACO

		PAGE
Subject: Grid Costy Passing Seal Tess 1/3/89	MIT	PAGE
Grid Cary	1	***
Tout 00	1	
Gist Cours		
14 300 Panels 32,600 Panels		
74 300 Panels 71 32,600 Panels		
	**	
56,900 panels /16 hours	٠	
56,900 Bards x 0.119 lbs grid x	2 30.4	m.
56,900 Bunds X 0.119 101/51.d	- 1	-10
16 hurs		127
13,542.2 5.13/16 hors	: uz : = = = = = = = = = = = = = = = = = =	
= 846.4 1b. hor		
= 870.7 160		
,		
Pasting		
#/1/1		
115,439 #/16 hours		
7,214 16/hour		

MAY 1 4 1990

Mr. Mark R. Ishihara Environmental Engineer JOHNSON CONTROLS Post Office Box 591 Milwaukee, Wisconsin 53201

> Re: Permit Continuance Permit No. R-2617

> > Wirtz Grid Casting Machine No. 3

Garland, Dallas County Account ID No. DB-0411-W

Dear Mr. Ishihara:

This will acknowledge receipt of your application for the above referenced permit continuance. We have determined that your application is deficient and additional information is needed to enable us to continue with our review. Please furnish the information indicated as follows:

- 1. Submit a current area map to scale, showing the location of the property relative to prominent geographical features such as highways, roads, streams, schools and residences. All areas within one mile of any plant boundary must appear on this map. Please indicate a circle of 3000 feet radius and a circle of 1 mile radius from the center of the facility. Please note the name and location of all schools within the circle of 3000 feet radius.
- 2. How many melting pots does the HCT-3 Wirtz Lead Grid Casting Machine have? What is the size of each pot? What is the hourly and annual production rate for this caster?
- 3. The December 1988 sampling report of Grid Caster Bank 8 is representative of what production rate?

Failure to submit this information within 30 days of the date of this letter could result in the Executive Director declaring your application void pursuant to Rule 116.3(f).

After receipt of the additional information, we will continue the review of your application. If the information furnished in response to this notice results in the need for further clarification or additional information, we will communicate that need as soon as possible.

Thank you for your cooperation in this matter. If you have questions concerning the review or this notice, please contact me.

Sincerely,

Rita Blackstock Mechanical Division

cc: Mr. Melvin Lewis, Regional Director, Fort Worth bcc: BLACKSTOCK/svj, board file (JOHNSON.DEF C:)

TEXAS AIR CONTROL BOAR 6330 HWY. 290 EAST, AUSTIN, TEXAS 78723, 512/451-5711

DICK WHITTINGTON, P.E. CHAIRMAN

BOB G. BAILEY VICE CHAIRMAN

STEVEN N. SPAW, P.E. EXECUTIVE DIRECTOR



JOHN L. BLAIR MARCUS M. KEY, M.D. CALVIN B. PARNELL, JR., Ph.D., P.E. WILLIAM H. QUORTRUP C. H. RIVERS WARREN H. ROBERTS MARY ANNE WYATT

May 3, 1990

Mr. Jordan Harwood Johnson Controls, Inc. P. O. Box 591 Milwaukee, Wisconsin 53201

Re: Accounting Receipt No. 03611
Permit No. R-2617
Grid Caster #3, S/N-155

Dear Mr. Harwood:

This is to acknowledge receipt of your PI-1 application and permit fee in the amount of \$300.00. The application was referred to our New Source Review Program, CORE Division, for an administrative review. You will be contacted if any additional information is required to complete this review. A copy of a TACB FACT SHEET concerning this review process is enclosed.

If you have any questions concerning this application, please contact our CORE Division.

Sincerely,

Bennie L. Engelke, Director Management & Staff Services

Enclosure

Peta Blackstock

200

SOURCE SAMPLING REPORT

FOR

JOHNSON CONTROLS, INC.

Toledo, Ohio

Grid Caster Bank 8

Performed by: ENVIRONMENTAL TESTING, INC. Charlotte, North Carolina

Paul R. Jenkins, Jr.

December 1988

SUMMARY OF RESULTS

Table Number 1 presents the summary of results from the lead sampling. The mean lead concentration from Grid Caster Bank 8 was 0.643 x 10⁻⁴ grains per dry standard cubic foot. The mean lead emission rate was 0.001024 pounds per hour.

Based on the results of the Method 12 sampling the Johnson Controls, Inc., Toledo, Ohio plant was in compliance with the allowable emission rate as permitted by the Ohio EPA for Grid Caster Bank 8. The allowable emission rate of 0.000176 grains per dry standard cubic foot is based on the regulations in 40CFR60, Subpart KK, "Standards of Performance for Lead-Acid Battery Manufacturing Plants," Section 60.372, Paragraph (a)(1).

TABLE OF CONTENTS

INTRODUCT	ION	1
SUMMARY O	F RESULTS	3
PROCESS D	ESCRIPTION	5
LOCATION	OF SAMPLING POINTS	6
SAMPLING	AND ANALYTICAL PROCEDURES	8
APPENDICE	s	ç
Α.	Summary of Results	
В.	Field Data	
c.	Process Data	
D.	Test Participants	
E.	Sampling and Analytical Procedures	
F	Calibration Data	

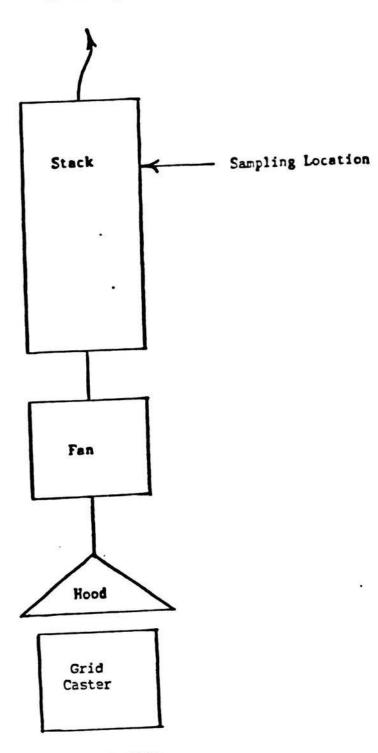
INTRODUCTION

Source sampling was performed for the Johnson Controls, Inc., Toledo, Ohio, plant to determine lead emissions from Grid Caster Bank 8. Three sampling runs were made on December 20, 1988. A typical sampling location is shown in Figure 1.

The measurements of stack gas flow rate and pollutant concentrations were made according to U.S. Environmental Protection Agency and the Ohio Environmental Protection Agency (Ohio EPA) recommendations. Mr. Jeffrey Twaddle, Toledo Department of Public Utilities, an agent of the Ohio EPA, was present to observe the test proceedings.

The following sections of the report treat the summary of results, the process and its operation, the location of the sampling points and the sampling and analytical procedures used.

To Atmosphere



FLOW DIAGRAM

BANK 8 CRID CASTER (typical)

Figure 1

TABLE 1 SUMMARY OF RESULTS, LEAD SAMPLING Grid Caster Bank 8

Run Number	1	2	3
Date	12/20/88	12/20/88	12/20/88
% Isokinetic	102.37	101.09	100.48
Volume of Gas Sampled, SCF * Dry	122.032	119.125	119.214
Stack Gas Flow Rate, SCFM * Dry	1866.2	1844.7	1857.4
Stack Gas Flow Rate, ACFM	2237.3	2224.2	2239.7
Lead:			
Catch, mgrams	0.6185	0.4550	0.4340
Concentration, grains/ SCF * Dry	0.0000781	0.0000588	0.0000561
Emission Rate, lbs/hr	0.00125	0.00093	0.000892

^{*68°}F, 29.92 in. Hg **Nozzle, probe, filter, impingers

PROCESS DESCRIPTION AND OPERATION

The Johnson Controls, Inc. Toledo, Ohio, plant has a grid casting operation that is typical. For Grid Caster Bank 8 lead is melted in a pot and flows down runners to the grid casting operation. The combustion gases are exhausted to the atmosphere as shown in Figure 1. No control devices are employed in this process.

No unusual conditions were noted during sampling. The process was continuous and ran in a normal manner.

TABLE 1(a) EMISSION SOURCES

PAGE	OF
DATE	

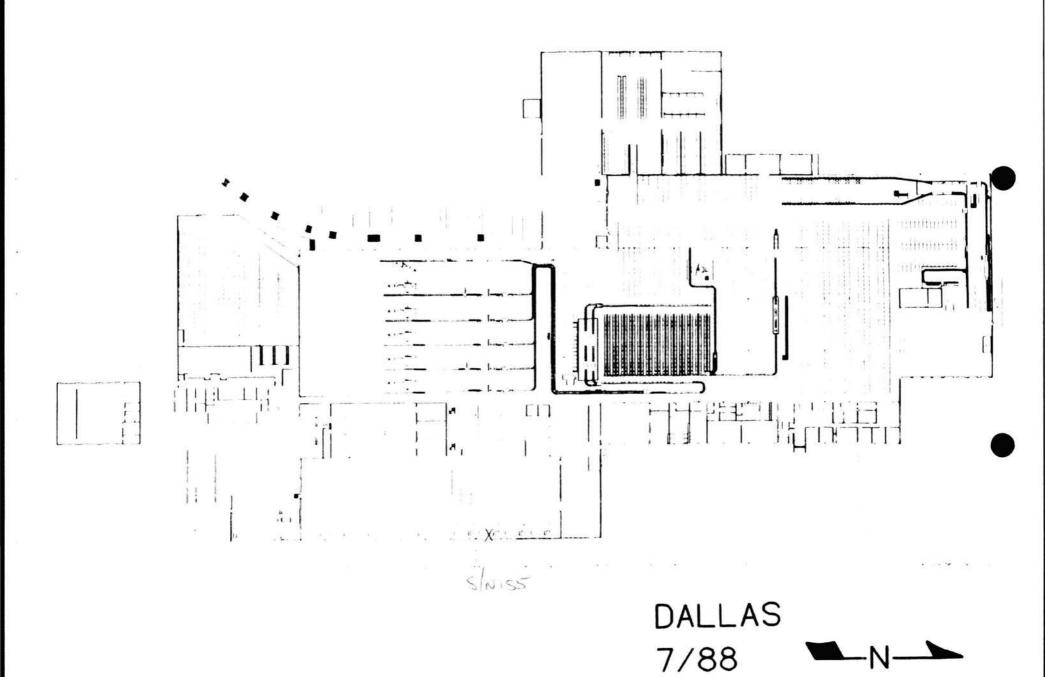
Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

AIR CONTAMINANT DATA					1		EMI	SSION PO	INT DISC	CHARGE	PARAME	TERS			
EMISSION POINT CHEMICAL COMPOSITION AIR CONTAMINANT OF TOTAL STREAM EMISSION RATE			TM COORD				K SOURCES [7]			AREA SOURCES [8]					
NUMBER	NAME	CONTAMINANT NAME [2]	COMC.(%v)	#/HR [4]	10NS/YR 5	ZONE	EAST (meters)	NORTH (:neters)	GROUND (ft)	ABOVE	DIA.			LENGTH	WIDTH (fi)
155	GC #3	Lead	.00176 grains/	.004 lscf	0.01	14	7.18	36.42	26	_10	1.3	31_	180		
155	Flue	NO _X	Neg.	Neg.	Neg.	14	7.18	36.42	26	10	1.3	31_	180_		
•						-									
								<u> </u>							
													5		

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 600 feet. TACB STANDARD CONDITIONS ARE 68° F AND 14.7 PSIA [RULE 131.01.00.001(55)]

General Instructions

- 1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits and Emissions Inventory Questionnaire. Limit emission point number to 9 character spaces. For each emission point use as many lines as necessary to list air contaminant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are OK
- 2. Typical component names are: air, H₂O, nitrogen, oxygen, CO₂, CO, NO_x, SO₂, hexane, particulate matter (PM), etc. Abbreviations are OK.
- 3. Concentration data is required for all gaseous components. Show concentration in volume percent of total gas stream
- 4. Pounds per hour (# /HR) is maximum emission rate expected by applicant.
- 5. Tons per year (T/Y) is annual maximum emission rate expected by applicant, which takes into account process operating schedule.
- 6. As a minimum applicant must furnish a facility plot plan drawn to scale showing a plant benchmark, latitude and longitude correct to the nearest second for the benchmark, and all emission points dimensioned with respect to the benchmark as required by General Application, Form PI-I. This information is essential for calculation of emission point UTM coordinates. Please show emission point UTM coordinates if known.
- 7. Supply additional information as follows if appropriate:
 - (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
 - (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack heights above ground" of stack.
 (c) If emission point is a flare, show flare data on Table 8.
- 8. Normally used for fugitive sources. Show dimensions of a minimum size rectangle which will "enclose" all fugitive sources included in this emission point number.



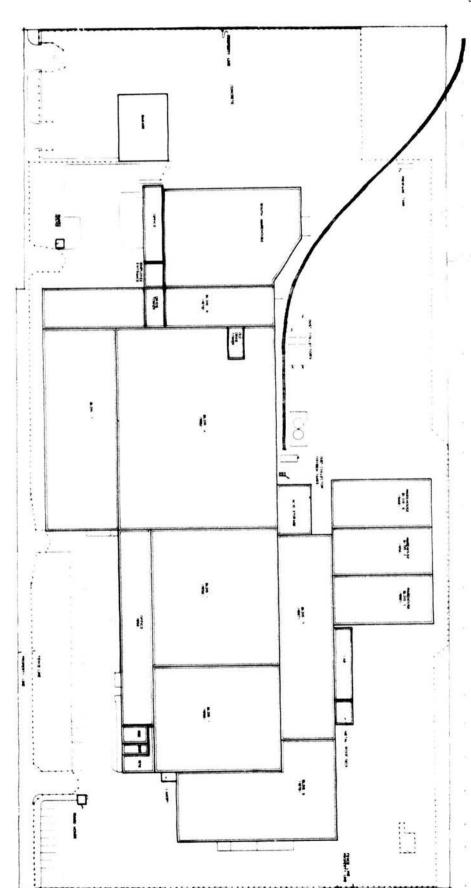


FACILITY PROFILES

SITE PLAN

FACILITY: DALLAS, TX

PAGE: 3.B DATE: 11-1-86



NORTH

Johnson Controls, Inc.
Battery p
5757 N. Sen Bay Avenue
Post Office Box 591
Milwaukee, WI 53201-0591
Tel. 414/228 1200



Mr. Allen Bell Texas Air Control Board 6330 Highway 290 East Austin, TX 78723

April 24, 1990

Dear Mr. Bell:

RE: Johnson Controls, Inc. - Garland, TX Air Permit Renewal #R-2617

Grid Caster #3, S/N 155

Enclosed is the application to renew the subject permit. Please note this Caster #3 was originally #6.

If you have any questions, call me at (414) 228-2650.

Sincerely,

JOHNSON CONTROLS, INC.

Mark R. Ishihara

Environmental Engineer

MRI/ajg

cc: D. J. Cooper

J. S. Harwood (w/o attachments)

DATE: 03-14-90 TIME: 18:25:22

GROUP: METL ID: D80411W

***GENERAL PERMIT INFORMATION

PERMIT: 2617 ENGR: PEWITT, LAWRENCE /

ISSUED TO: JOHNSON CONTROLS, INC.

UNIT NAME: WIRTZ GRID CASTING MACHINE

OPERATING SCHEDULE: 24.0 HRS/DAY 5 DAYS/WK 52 WKS/YR LAT: 32-54-15 LONG: U96-40-00 REGION: 8 COUNTY: DALLAS

NEAR CITY: GARLAND LOC: 1111 SHILOH RD.

***PERMIT/SITE CONTACT INFORMATEON:

ADDR1: P.O. BOX 591

PERSON: JORDAN S. HARWOOD ADDR1: P.O. BOX 591

TITLE: MGR ENVIRONMENTAL CONTROL
CITY: MILWAUKEE STATE: WI ZIP: 53201 PHONE: (414) 228-2650

APPL RECD : 07-29-74 OPER APPL RECD : 09-05-75 APPL RECD

DEFIC LTR SNT : OPER APPL CMPLT : DEFIC LTR SNT : SUPP INFO REQ : DISP(1,0): (1) 10-23-75 SUPP INFO REQ :

SUPP INFO REQ : DISP(I,D): (I) 10-23-75 SUPP INFO REQ :
SUPP INFO RECD : 12-27-74 OPR TYPE(R,S) : (R) SUPP INFO RECD :
APPL CMPLT : *******************************

COMP LTR SNT : * COMP LTR SNT :
PUB NTC SNT : * I= ISSUED D=DENIED * PUB NTC SNT :
PUB NTC PUB : * F=EXPIRED * PUB NTC PUB :
PUB HEAR (R,H) : () * C=CNST S=SPECIAL * PUB HEAR(R,H) : ()
CNST TYPE(C,X,S): (C) * X=EXEMPT R=OPER * DISP(I,D,F):():

DISP (1) : 01-24-75 **************

CNST START DATE :

***EMISSIONS CHANGED :

PROPERTY LINE SAMPLE MADE TO DETERMINE ACTUAL CONDITIONS ***REMARKS:

FROM THIS FACILITY LEAD MEASURED LESS THAN U.5 MICROGRAMS PER

CUBIC METER ONE HOUR SAMPLE

***OTHER PERMIT DATES:

APP/PERMIT VOIDED:

APP ON HOLD UNTIL:

CONST STOPPED UNTIL:

***OTHER PERMIT DATES:

REASON:

REASON:

DO-DATA DELAY

RE-REISSUED

NR-NO RESPONSE

***PERMIT TYPES/STANDARDS:

NEW MAJ SOURCE:> 100 TPY: SIC: 3591

MAJOR MODIFICATION: NON-ATTAIN REVIEW: RELATED PERMITS: SUFFIX REASON

MAJOR MODIFICATION: PORTABLE:
NON-ATTAIN REVIEW: NSPS:
INSIGNIFICANT EMISSIONS: X NESHAP: TACH: CHG LOC: PSD-TX: CHG DWN:

TOXIC MATERIALS: STD EX NO.: FUEL CONVERSION:

***AIR CONTAMINANT INFORMATION: MAX ALLOWABLE RATE ACTUAL

public motice pellina :: PM- lead order,

NAME CODE LBS/HR TONS/YR TONS/YR

***ABATEMENT EQUIPMENT:

DICK WHITTINGTON, P.E. CHAIRMAN

BOB G. BAILEY VICE CHAIRMAN

ALLEN ELI BELL EXECUTIVE DIRECTOR



JOHN L. BLAIR
MARCUS M. KEY, M.D.
OTTO R. KUNZE, Ph.D., P.E.
HUBERT OXFORD, III
WILLIAM H. QUORTRUP
C. H. RIVERS
MARY ANNE WYATT

February 28, 1990

Mr. Jordan S. Harwood Manager, Environmental Control Johnson Controls, Incorporated Post Office Box 591 Milwaukee, WI 53201

Re: Permit No. R-2617
Wirtz Grid Casting Machine
Garland, Dallas County
Account ID D8-0411-W

Dear Mr. Harwood:

Section 3.28(g) of the Texas Clean Air Act and Texas Air Control Board (TACB) Regulation VI, Rule 116.12 (copy enclosed) require that all operating permits issued by the TACB be reviewed every 15 years. This letter is to notify you that the referenced operating permit is scheduled for review. Please apply for review of your permit within 90 days after receipt of this notice using the enclosed application form. Failure to apply within 90 days will result in expiration of this permit 15 years following the date it was issued unless the application period is extended by the Executive Director for good cause.

Please furnish all information requested on the enclosed form. A fee based on the schedule set forth in Regulation VI, Rule 116.12 must be submitted with this application. Upon receipt of your application, a determination will be made, based on the quantity and character of emissions and the location of the facility, as to the need for you to furnish atmospheric dispersion modeling to determine the impact of emissions on the surrounding area. After we receive your completed application, we will notify you of the requirements and procedures for public notification.

If we may be of assistance to you in this matter, please contact the Permits Division.

Sincerely,

Allen Eli Bell Executive Director

Enclosures

cc: Mr. Melvin Lewis, Regional Director, Fort Worth



ONE COM OF LISTER

COMPLETE PRINT OUT

TO EACH APPROPRIATE FILE

TO EA

NOV 1 3 1980

Mr. Robert Nicolai Manager Environmental Control JOHNSON CONTROLS, INCORPORATED Post Office Box 591 Milwaukee, Wisconsin 53201

> Re: Change of Name Lead Battery Manufacturing Facility Garland, Dallas County

Dear Mr. Nicolai:

We appreciate being informed of the change in the name of your company from Globe Union, Incorporated to Johnson Controls, Incorporated.

Our files have been updated to indicate this change in name.

Your cooperation and interest in air pollution control is appreciated. Sincerely,

Louis R. Roberts, Ph.D., P.E., Director Permits and Source Evaluation Division

cc: Mr. Melvin Lewis, Regional Supervisor, Fort North Dr. Allen M. Fain, Director, Dallas County Health Department, Dallas

bcc: LEPEWITT/cjr; file; board; A-33

LA



TEXAS AIR CONTROL BOARD FORM PI-1, GENERAL APPLICATION

-	
	e w
ON	~

(Owner, Plant Manager, President, Vice President)

	TEXAS AIR CONTROL BOARD FORM PI-1, GENERAL APPLICATION
	All the information requested herein must be completed and submitted before public notification procedures may be initiated.
I.	PERMIT TO BE ISSUED TO: Johnson Controls Inc.
	Mailing Information (Person, title, address): North Green Bay Avenue - P.O. BOX 591 - Milwaukee, Wisconsin 53201
II.	LOCATION OF FERMIT UNIT (Latitude and Longitude must be to the nearest second): Zip Code of Permit Unit Site: 75040 Name of plant or site: Globe-Battery-Garland Plt. Street Address (if applicable) 1111 Shiloh Road
	Nearest City: Garland County: Dallas Latitude: N32°54'15" Longitude: W-96°-40'0"
Ш.	TYPE OF OPERATION OF PROCESS OF PERMIT UNIT: To record the change in company name - from
	A. Name of operation or process of permit unit: Globe-Union to Johnson Control, Inc.
	B. Applicants unit identification number: Johnson Control - Garland Plt 1111 Shiloh Rd-Garland C. Type (check one): ☑ Permanent □ Portable
	D. Operating schedule: 24 Hours/day; 5 Days/week; 50 Weeks/year.
	DEDMIT UNIT OF A COUNTY OF THE
IV.	PERMIT UNIT CLASSIFICATION (Check applicable blocks): A. □ New Permit Unit: Proposed start of construction date: Proposed start of operation date:
	B. Modification of Facility (See Section 1.03(9) of the Texas Clean Air Act) (Supply proposed dates in IV.A. above.)
	C. □ Change in Location ☑ Change in Ownership □ Permit Unit Now Operating Under Permit R-
V.	If Items IV. A, B, or C were checked, submit the following information under either A or B:
	A. Data requested in B1, B2, B3, B4, and B5 has been previously submitted under Permit No. Submit three copies of an area map to approximate scale showing the location of the property, geographical features such as highways, roads, streams and significant landmarks (including buildings and residences), distance to the center of nearest city of town if located outside an incorporated municipality. If the property is located within a town or city, a city map may be used to present this information, and if outside a town or city, a county highway may may be used.
	B.2. Give a legal description of the tract of land upon which the plant or facility is located. The term "legal description" means either a metes and bounds description, or the block and lot number of a platted subdivision which would be suitable to effectuate the transfer of title to real property.
	B.3. Submit a plot plan of the property, to scale, showing the boundaries, plant bench mark (Latitude-longitude), the location of all emission points of any air contaminants on the property, true north direction. Identify the emission points by numbers; use the same numbers for those emission points in this permit that will be consistent with the flow diagram process description and emission inventory questionnaire.
	B.4. Submit emission data and stack parameters on Table 1. Review can be expedited if each emission point having more than one (1) pound per hour of particulate matter or sulfur dioxide is located with a specific latitude and longitude. Include fugitive emissions on Table 1 and submit information showing how the fugitive emissions were estimated.
	B.5. Submit the estimated installed capital and operating costs for any and all abatement equipment associated with the permit unit.
VI.	Submit the following information (See instructions concerning submission of confidential information).
	A. Process Flow Diagram. Prepare and attach a flow diagram identifying significant individual processes and/or operations. Identify by number, points where raw materials, chemicals, and fuels are introduced, where gaseous emissions and/or airborne particulate matter may be discharged, including intermediate releases, where finished products are obtained, and location of pollution control devices.
	B. Description of Process. Prepare and attach a written description of each process and of the function of the equipment in the process. (Identify items of equipment by numbers corresponding to flow diagram numbers.) The description must be in sufficient detail to determine the general operation of the process including emission sources and abatement equipment functions.
	C. Material Balance. Submit Table 2 showing all materials used or produced by the permit unit.
VII.	A copy of the application is being sent to the Regional Office of the Texas Air Control Board - Yes A copy of the application is being sent to the local city or county air pollution control program -
VIII.	vice Frestdent Gen. Manager Battery Divisio
	(Name) state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Clean Air Act, Article 4477-5, Vernon's Texas Civil Statutes, as amended, or any of the Rules and Regulations of the Texas Air Control Board or any local governmental ordinance or resolution enacted pursuant to the Texas Clean Air Act.
	DATE 10/ SO SIGNATURE



PHONE 512/451-5711 8520 SHOAL CREEK BOULEVARD CHARLES R. BARDEN, P. E. EXECUTIVE DIRECTOR

JOHN L. BLAIR Chairman AUSTIN, TEXAS - 78758

October 23, 1975

ALBERT W, HARTMAN, JR., M.D.
E.W. ROBINSON, P.E.
CHARLES R. JAYNES
JAMES D. ABRAMS, P.E.
FRED HARTMAN
WILLIE L. ULICH, Ph.D., P.E.
JOE C. BRIDGEFARMER, P.E.

HERBERT W. WHITNEY, P.E. Vice-Chairman

> Mr. G. E. Stoughton Manager, Corporate Facilities GLOBE-UNION INCORPORATED P. G. Box 591 Milwaukee, Wisconsin 53201

> > Re: Permit No. R-2017

Wirtz Grid Casting Machine #1 Garland, Dellas County, Texas

Dear Mr. Stoughton:

An operating permit for your new facility is enclosed. We appreciate your cooperation in sending us the necessary information to evaluate your proposed facility.

Thank you for your interest and cooperation in air pollution control.

Yours very truly,

Charles R. Barden, P.E.

Executive Director

Texas Air Control Board

cc: Mr. Melvin Lewis, Regional Supervisor, Fort Worth

Dr. J. M. Pickard, Director, Dellas County Health Department, Dallas

LEPswitt/lb, File

TEXAS AIR CONTROL BOARD Permits Section

FROM:	-AWRENCE PEN	VITT TO: Exe	ecutive Director	
(Project Engineer)	oplication for Permit to		517
1. COMPA	NY: GLOBE U	NION, INC.		
	8 4	SHILOH ROAD, GA	RLAND, DALLA	s COUNTY
		LONGIT		
		GRID CASTING		
	T UNIT I.D.: 6			
	NEW SOURCE	MODIFICATION		
6. NSPS	▼ TACB	NSPS TACE	X PERMANE	NT PORTABLE
7. NAME	AND RATE OF CONTAMINAN	TS TO BE EMITTED:		
Air C	ontaminant	Emission Rate	Uncontrolled	Regulation Allowable
LEA	D OXIDE	0.05 15 HR	0.05 16/HR	
THE	OPERTY INS A	MPLE INDICATES	culto or us	1/M3 NET LEAD
	,			
	NCENTRATION (1 TI	R) FOR ALL FACI	LITTES.	
		LLUTION CONTROL DEVICES;		
9. COMME	MIS - TECHNICAL REVIEW	GLOBE UNION IS	A BATTERY ME	G. FACILITY
10. SPECI	al provisions: - Fuenace Exhaus			
6)			
11. COMME	NTS - REGIONAL OFFICE:	FAVORABLE		
	LOCAL PROGRAM:	No OBJECTION		
	AIR QUALITY:	No OBJECTION		
	COMPLIANCE	FAVORABLE		
	COMPLIANCE LEGAL:	FAVORATELE No LEGAL ACTION	U PENDING	
12. RECOM	LEGAL: MENDATION - IT IS RECOMED (SUB-	MENDED THAT THIS APPLICATION TO SPECIAL PROVISION	CATION BE: DNS NOTED ABOVE).	
	LEGAL: MENDATION - IT IS RECOMED (SUBJECTION) MENDATION - IT IS RECOMED (SUBJECTION)	MENDED THAT THIS APPLIC	CATION BE: DNS NOTED ABOVE).	u & Donatt
Date Rec	LEGAL: MENDATION - IT IS RECOMED (SUBSECTION - MATTER DENIED. WRITE	MENDED THAT THIS APPLICATION OF THE APPLICATION OF	CATION BE: DNS NOTED ABOVE).	u & Peurtt

ADDRESS OF APPLICANT



AN OPERATING PERMIT IS HEREBY ISSUED TO

GLOBE UNION, INCORPORATED

AUTHORIZING OPERATION OF

Wirtz Grid Casting Machine #6

WHICH IS LOCATED AT Garland, Dallas County, Texas Lat. 32°54'15" Long. 96°40'00"

and which is to be operated in accordance with and subject to the Texas Clean Air Act, as amended (Article 4477-5, VATS), and all Rules, Regulations and Orders of the Texas Air Control Board. Said operation is subject to any additional or amended rules, regulations and orders of the Board adopted pursuant to the Act, and to all of the following conditions:

- 1. This permit is non-transferable from person to person or from place to place.
- 2. Upon request by the Executive Director of the Texas Air Control Board, the holder of this permit shall make sufficient stack sampling analyses, or other tests, to prove satisfactory equipment performance. All sampling and testing procedures shall be approved by the Executive Director and coordinated with the regional representatives of the Texas Air Control Board.
- The facilities covered by this permit shall not be operated unless all associated air pollution abatement equipment is maintained in good working order and operating properly during normal facility operations.
- 4. Special Provisions:
 - 1. Opacity of emissions from the furnace exhaust must not exceed 20%, averaged over a 5-minute period as determined by a trained observer, except for those periods described in Rule 103.1 of Regulation I.
 - Emissions from this facility must not cause or contribute to a condition of 'air pollution' as defined in Section 1.03.(3) of the Texas Clean Air Act, Article 4477-5, V.A.T.S. If such a condition should exist, additional abatement measures necessary to control and prevent the condition must be implemented.

Acceptance of this permit constitutes an acknowledgement and agreement that the holder will comply with all Rules, Regulations and Orders of the Board issued in conformity with the Act and the conditions precedent to the granting of this permit.

PERMIT NO. R- 261.7

DATE October 23, 1975

EXECUTIVE DIRECTOR

TEXAS AIR CONTROL BOARD

(DIRECTOR, CONTROL AND PREVENTION)



OFFICE OF THE

COUNTY HEALTH DEPARTMENT

1936 AMELIA DALLAS, TEXAS 75235

September 19, 1975

Steve Spaw, Director Permits and Inventory Division Texas Air Control Board 8520 Shoal Creek Blvd. Austin, Texas 75758

Re:

Permit Application R-2617

Globe Union, Inc.

Wirtz Grid Casting Machine

#6

Garland, Dallas County

L. E. Pewitt

Dear Mr. Spaw:

We have received a copy of the above mentioned permit application. If the proposed facility is operated in accordance with the regulations of the Texas Air Control Board and with any special conditions attached to the permit, there should be no nuisance created by the facility.

We appreciate your keeping this office informed of applications within Dallas County.

Yours very truly,

J. M. Pickard, M. D. In D

Director

LLJ/mjb

SEP 26 1975

AIR POLLUTION CONTROL



TEXES AIR CONTR

PERMITS SECTION

DATE:

FRO	om: L.E. PEWITT TO: (X) REGION (X) LOCAL PLACED (X) LOCAL PLACED (X) AQE; (X) COMP.; (X) LEGAL
REC	QUEST FOR COMMENTS ON PERMIT APPLICATION (R) 2617
1.	COMPANY: GLOBE UNION INC.
2.	FACILITY LOCATION: 1111 SHILDH ROAD, GARLAND, DALLAS COUNTY
3.	LATITUDE: 32 - 54 - 15 LONG.: 96 - 40 - 00
4.	PERMIT UNIT NAME: WIRTZ GRID CASTING MACHINE
5.	PERMIT UNIT I.D.: 6
6.	(X) NEW SOURCE; () MODIFICATION; (X) PERMANENT; () PORTABLE
7.	DATE: May 5, 1975 for () PROPOSED START OF CONSTRUCTION. () ACTUAL START-UP OF FACILITY.
8.	NAME AND RATE OF AIR CONTAMINANTS: Air Contaminant Emission Rate Uncontrolled Rate Reg. Allowable LEAD OXIDE 0.054 1/Hz 0.054 1/Hz BASED ON SIMILAR FACILITY
9.	OPER. SCH.: 24 H/D; 5 D/W; 52 W/Y; CONTINUOUS.
10.	TYPE AND QUANTITY OF AIR POLLUTION CONTROL DEVICES:
11.	ENGR. COMMENTS/TECHNICAL REVIEW: PROPERTY LINE SAMPLE ATTACHED THOICAGES 0.1 to 0.2 49/43 LEAD NET 1 HE CONCENTRATION
12.	PROPOSED SPECIAL PROVISIONS:
s pre	QUESTED COMMENTS: (Please return your comments as soon as possible.) epared by James D. Sande; II comments are favorable in granting Permit No. R-2617, re: SSIR dated 7-31-75 by

Comment

Regio James D. Sandel.

Recommendations:

Grant Permit No. R-2617 with inclusion of Special Provision 15 and 16.

Signed BOARD FILE

September 19, 1975 Date

AIR CONTROL BOA
eillance Investigator's

Account Number:

Ol	Region: 08 County: Dellas Local Program: Investigation Conducted By: 050
	Date of Investigation: 97/32/15 Regional and Compliance Divisions Status: AA X EX DA 40
	Regional determines EI Status should be: AA 41 EX 42 DA Computer Time 1000 Area Land Use: AE BECED
	Name, Parent Company, Location and Mail Address:
02	Globe Union, Inc. *
03	Bettery Division, 1111 Shiloh Rd.
04	Sex 2/19 11
05	Gerland, Texas 75040 *
06	
07	11 48
	48
08	11 48
09	11 48 -
10	Name of Management: Robert F. Nicolai Title: Pol Cont Engr
12	Person Contacted: Bame & W. N. Vining, Jr Title: #1th-Saf Tech AC 214 No. 494-2461
12	Nature of Business: El Group No(s) 63/60 62 64
13	Primary Products: Automotive batteries 60 62 64
14	Biennial Investigation? Progress Report? Complaint Investigation? Permit Investigation?
	Alternate Methods? Compliance Request? Upset and Maintenance Notification? Other?X 15
	Notice of Violation ofOn this date account appears to be in compliance. Yes No Undetermined
15	Type of Sample taken: Property Line Opacity Stack Pollutant Sampled for: Particulate SO2 H2S 16
	Other No sample taken but Problem Exists of Priority: High Medium Low 25 26
	Emissions Inventory Point Source Number Sampled: Sampled Fugitive Emissions:
16	Statement of Problem:
17	Complaint Number: Date Complaint Received/_/_ Nature of Complaint: Odor Smoke Dust Other 11
18	Complaint Number: Date Complaint Received/ Nature of Complaint: Odor Smoke Dust Other 25
19	Complaint Number: Date Complaint Received $\frac{16}{16} / \frac{18}{20} / \frac{20}{20}$ Nature of Complaint: Odor $\frac{22}{23}$ Smoke $\frac{23}{23}$ Dust $\frac{24}{24}$ Other $\frac{25}{25}$
	If Name and/ or Address Change, give Previous Name and/or Address:
	Investigators: Approved By: DD
	9-11-75

Investigator's Comments:

See attacmment.

Permit Engineer: Lawrence Pewitt

Permit # C-2617

RECEIVED

SEP 18 1975

PE AIR POLLUTION CONTROL

Dallas County Globe Union, Inc.

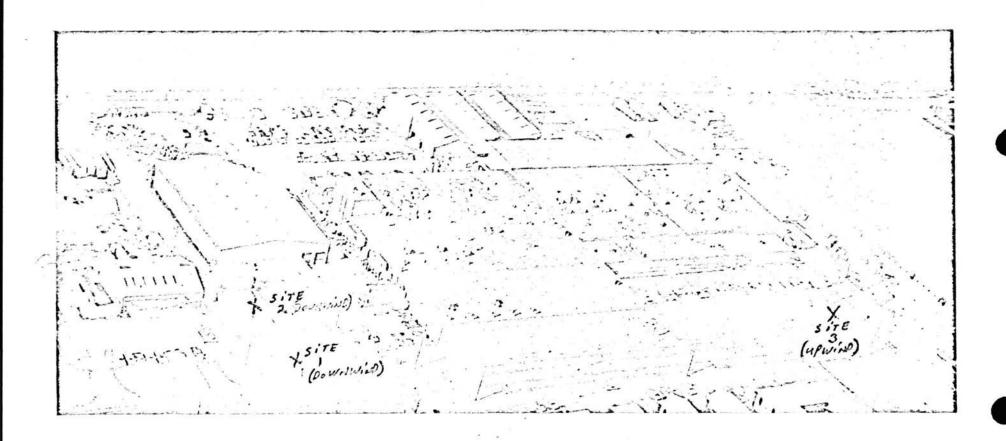
July 31, 1975

Investigator's Findings:

An investigation was conducted on this date to observe ground level particulate sampling at Globe-Union, Inc. by Ecology Audits, Inc. At the time of sampling wind conditions were variable, ranging in direction from 360° to 45° with a velocity of 5 to 7 mph. No visible stack or fugitive emissions were observed from the plant. Two one-hour samples were taken utilizing one upwind sampler (site 3) and two downwind samplers (site 1 and 2). Note map accompanying this report for location of samplers as related to the facility. Gelman Type A glass fiber filters were utilized with each sampler during the runs. The filters were placed in protective envelopes upon completion of sampling. Radio communications were used so as to achieve simultaneous upwind and downwind samples. Sample run one started at 12:55 p.m. and sample run two started at 2:25 p.m. Both runs were conducted by Sam Fumphries and Allen Cunningham of Ecology Audits, Inc. All sampling seemed to follow correct procedures.

Recommendations:

Review sampling results before approving Permit No. C-2617.



(A)

DISTANCES ARE NOT TO SCALE

AND WEKE ESTIMATED.

7-/4

AIR QUALITY EVALUATION DIVISION COMMENTS ON PERMIT APPLICATION #R-2617

Engineer: 2. E.	Peurtt	
	be Union, One.	
Region: 8 Count	y: Dalles	
Lat 32-54-15 Lo	ong. <u>96 -40-00</u>	
Date received:	9-11-75	
Pollutant	Added Tons/Year from Permit Unit	1972 Emissions in the County
Porticulate	0.2	13630
		
	CHESTON STATES TO SELECT THE WITHIN	
	Ambient air quality data att	ached.
	Additional AQED comments att	
	No new comments since Constr	ruction Permit.
1ms	Air Quality Evaluation comme	ents complete.
	Air Quality Evaluation comme	ents <u>not</u> complete because
REGELVED		
SEP 15 1975		
NTORY	Signed	lones & Preud
AIR POLLUTION CONTROL	Air	Quality Data Analysis
	Date	9-12-75

· (LALCE VERY AS AIR CONTROL BOARD
16	PERMIPS SECTION
	SEP 11 1975 . DATE:
	AIR QUALITY EVALUATION AIR POLLUTION TO: (X) REGION 8; (X) LOCAL; COUNTY (X) AQE; (X) COMP.; (X) LEGAL (C)
	REQUEST FOR COMMENTS ON PERMIT APPLICATION (R) 2617
	1. COMPANY: GLOBE UNION INC.
N .	2. FACILITY LOCATION: 1111 SHILOH ROAD, GARLAND, DALLAS COUNTY
	3. LATITUDE: 32 - 54 - 15 LONG.: 96 - 40 - 00
	4. PERMIT UNIT NAME: WIRTZ GRID CASTING MACHINE
	5. PERMIT UNIT I.D.: 6
	6. (X) NEW SOURCE; () MODIFICATION; (X) PERMANENT; () PORTABLE
	7. DATE: May 5, 1975 for () PROPOSED START OF CONSTRUCTION. () ACTUAL START-UP OF FACILITY.
ű	8. NAME AND RATE OF AIR CONTAMINANTS: Air Contaminant Emission Rate Uncontrolled Rate Reg. Allowable LEAD OXIDE 0.054 1/4K 0.054 1/4K —— BASED ON SIMILAR FACILITY
	9. OPER. SCH.: 24 H/D; 5 D/W; 52 W/Y; CONTINUOUS.
	10. Type and Quantity of air pollution control devices:
	11. ENGR. COMMENTS/TECHNICAL REVIEW: PROPERTY LINE SAMPLE ATTACHED
	THOICARS O. 1 to 012 Hg/M3 LEAD NEW 1 HE CONCENTED TROIT
	12. PROPOSED SPECIAL PROVISIONS:
	(IS) (IS)
	REQUESTED COMMENTS: (Please return your comments as soon as possible.)

Contract of the last

Carr



	DATE:
FROM: LE. PEWITT	TO: (X)REGION _ (X)LOCAL; COUNT (X)AQE; (X)COMP.; (X)LEGAT
REQUEST FOR COMMENTS ON P	ERMIT APPLICATION (R) 2617
1. COMPANY: GLORE L	UNION INC.
2. FACILITY LOCATION:	1 SHILOH ROMO, GALLAND, DALLAS COUNTY
3. IATITUDE: 32 - 54	-15 LONG.: 96 - 40 - 00
4. PERMIT UNIT NAME: WIR	STZ GRID CASTING MACHINE
5. PERMIT UNIT I.D.:	
6. (X) NEW SOURCE; () MOI	DIFICATION; (Y) PERMANENT; () PORTABLE
7. DATE: May 5, 1975	for () PROPOSED START OF CONSTRUCTION. () ACTUAL START-UP OF FACILITY.
LEAD OXIDE 0.0	ONTAMINANTS: ion Rate Uncontrolled Rate Reg. Allowable 54 1/HK 0.054 1/HK
2	
9. OPER. SCH.: 24 H/D;	5 D/W; 52 W/Y; CONTINUOUS.
None	IR POLLUTION CONTROL DEVICES:
11. ENGR. COMMENTS/TECHNICATES A THORAGES O. 1 to	
12. PROPOSED SPECIAL PROVI	SIONS:
(B) (G)	REFEREN
	se return your comments as soon as possible.
No legal action of	Ichdung Alice Construction

J.11-76

EOARD FILE

1	12	- 1	13
F	13	V-!):1
1	(3)	أنزاج	17
		-	

		DATE:
		TO: (X) REGION 8; (X) LOCAL; CALL. (X) AQE; (X) COMP; (X) LEGAL
REC	EQUEST FOR COMMENTS ON PERMIT	T APPLICATION (R) ZG17
1.	. COMPANY: GLOBE UMON	J INC.
2.	. FACILITY LOCATION: 1111 St	HILOH ROAD, GARLAND, DALLAS COUNTY
3.	. LATITUDE: 32 - 54 - 15	5 LONG.: 96 - 40 - 00
4.	. PERMIT UNIT NAME: WIRTZ	GRID CASTING MACHINE
5.	PERMIT UNIT I.D.: 6	
6.	. (X) NEW SOURCE; () MODIFIC	CATION; (x) PERMANENT; () PORTABLE
7.	DATE: May 5, 1975 for (() PROPOSED START OF CONSTRUCTION. () ACTUAL START-UP OF FACILITY.
8.	NAME AND RATE OF AIR CONTAM Air Contaminant Emission R LEAD OXIDE 0.054 19 BASED ON SIMILAR	Rate Uncontrolled Rate Reg. Allowable
9.	OPER. SCH.: 24 H/D; 5	D/W; 52 W/Y;CONTINUOUS.
10.	None None	DLLUTION CONTROL DEVICES:
11.	PROPERTY LINE SAMPLE	· ·
12.		

REQUESTED COMMENTS: (Please return your comments as soon as possible.)

SEP 12 1975



- Tester	. DATE:
FRO	OM: L.E. PEWITT TO: (X) REGION 8; (X) LOCAL; COUNTY (X) AQE; (X) COMP.; (X) LEGAL
REC	QUEST FOR COMMENTS ON PERMIT APPLICATION (R) 2617
1.	COMPANY: GLOBE UNION INC.
2.	FACILITY LOCATION: 1111 SHILOH ROAD, GALLAND, DALLAS COUNTY
3.	LATITUDE: 32 - 54 - 15 LONG.: 96 - 40 - 00
4.	PERMIT UNIT NAME: WIRTZ GRID CASTING MACHINE
5.	PERMIT UNIT I.D.: 6
6.	(X) NEW SOURCE; () MODIFICATION; (¥) PERMANENT; () PORTABLE
7.	DATE: May 5, 1975 for () PROPOSED START OF CONSTRUCTION. () ACTUAL START-UP OF FACILITY.
8.	NAME AND RATE OF AIR CONTAMINANTS: Air Contaminant Emission Rate Uncontrolled Rate Reg. Allowable LEAD OXIDE 0.054 HK 0.054 HK BASED ON SIMILAR FACILITY
9.	OPER. SCH.: 24 H/D; 5 D/W; 52 W/Y;CONTINUOUS.
10.	TYPE AND QUANTITY OF AIR POLLUTION CONTROL DEVICES:
11.	ENGR. COMMENTS/TECHNICAL REVIEW: PROPERTY LINE SAMPLE ATTACHED JUDICARS 0.1 to 0.2 49/41 LEAD NET 1 HE CONCENTRATION
12.	PROPOSED SPECIAL PROVISIONS:

REQUESTED COMMENTS: (Please return your comments as soon as possible.)



TEXASOLIR CONTROL POARD

PHONE 512/451-5711 8520 SHOAL CREEK BOULEVARD CHARLES R. BARDEN, P. E. EXECUTIVE DIRECTOR

JOHN L. BLAIR Chairman

HERBERT W. WHITNEY, P.E.

Vice-Chairman

AUSTIN, TEXAS - 78758

September 11, 1975

ALBERT W. HARTMAN, JR., M.D.
E.W. ROBINSON, P.F.
CHARLES R. JAYNES
JAMES D. ABRAMS, P.E.
FRED HARTMAN
WILLIE L. ULICH, Ph.D., P.E.
JOE C. BRIDGEFARMER, P.E.

Dr. J. M. Pickard, Director DALLAS COUNTY HEALTH DEPARTMENT 1936 Amelia Street Dallas, Texas

> Re: Permit Application R-2617 Globe Union, Inc.

Wirtz Grid Casting Machine

#6

Garland, Dallas County

L. E. Pewitt

Dear Dr. Pickard:

This is to notify you that the above referenced company has submitted an application for a permit to operate a facility in accordance with Regulations of the Texas Air Control Board. A copy of the application data is attached or the applicant indicated that he has already sent a copy to your office.

Your comments concerning this application should be submitted to this office within ten (10) days from the date of this letter so that they can be evaluated before any decision is made. We appreciate your time and effort, and if further information is needed, please let us know.

Yours very truly,

Steve Spaw, Director

Permits & Inventory Division

Texas Air Control Board

Board, File

FORM PI-3, OPERATING APPLICATION WIRTZ #6 GRID CASTING MACHINE

2617

	I.	PERMIT TO BE ISSUED TO: GLOBE-UNION INC.				
	•	(Corporation, Company, Government Agency, Firm, etc.)				
		Mailing Address: P. O. BOX 591 MILWAUKEE, WISCONSIN 53201				
		Manager				
		Individual authorized to act for applicant: Name: G. E. StoughtonTitle: Corporate Facilit	ies			
		Address: 5757 N. Green Bay Ave., Milwaukee, WI 53201 Telephone: (414) 228-3288				
	II.	PERMIT UNIT INFORMATION:	1			
		Location: Nearest City Garland, Texas County Dallas				
		Permit Unit now operating under permit No. C2617				
		remit Unit now operating under permit No. C. 2017				
	III.	PERMIT UNIT SCHEDULE:				
		Date permit unit placed in operation: May 5 1975				
		(Month) (Day) Year)				
	IV.	EQUIPMENT COSTS:				
£		For statistical purposes applicant is requested to furnish the total installed of air pollution abatement equipment required for this permit: (This information is not mandatory, but would be appreciated.) # C SEP 5 1975 PERMITS AND III, ENTORY AIR POLLUTION CONTROL				
	V.	SPECIAL PROVISIONS:				
	pr	If special provisions were listed on the construction permit, supply data or other information to indicate compliance with those provisions. Stached ecology audit air emission report #EA754-14 covers all special covisions, including opacity report. All results are well within existing the standards.	g			
	VI.	I, R. F. NICOLAI POLLUTION CONTROL ENGINEER				
	(Name) (Title)					
state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Clean Air Act, Article 4477-5, Vernon's Civil Statutes, as amended, or any of the rules and regulations of the Texas Air Control Board or any local governmental ordinance or resolution enacted pursuant to the Texas Clean Air Act. DATE SEPTEMBER 2, 1975 SIGNATURE SIGNATURE						
_		DATE SEPTEMBER 2, 1975 SIGNATURE				
		Enclosures: (3) Ecology Audit Reports EA-754-14				



PHONE 512/451-5711 8520 SHOAL CREEK BOULEVARD CHARLES R. BARDEN, P. E. EXECUTIVE DIRECTOR

JOHN L. BLAIR Chairman

HERBERT W. WHITNEY, P.E. Vice-Chairman AUSTIN, TEXAS - 78758

ALBERT W. HARTMAN, JR., M.D.
E.W. ROBINSON, P.E.
CHARLES R. JAYNES
JAMES D. ABRAMS, P.E.
FRED HARTMAN
WILLIE L. ULICH, Ph.D., P.E.
JOE C. BRIDGEFARMER, P.E.

January 24, 1975

Mr. G. E. Stoughton
Manager
Corporate Facilities
GLOBE-UNION INCORPORATED
P. O. Box 591
Milwaukee, Wisconsin 53201

Re: Permit No. C-2617
Wirtz Grid Casting Machine
Garland, Dallas County

Dear Mr. Stoughton:

A construction permit for your new facility is enclosed. We appreciate your cooperation in sending us the necessary information to evaluate your proposed facility.

We have also enclosed an application(s) for a permit to operate (Form PI-3). Within sixty (60) days after operation of the facility begins, please return each application in triplicate.

Yours very pryly,

Charles R. Barden, P.E.

Executive Director

Texas Air Control Board

Enclosure

cc: Mr.Melvin Lewis, Regional Supervisor, Fort Worth Dr.J.M. Pickard, Director, Dallas County Health Department,

Dallas

LEPewitt/bab, file

FR	MC	L. E.Pewitt -	Permits Section	TO Execu	tive Direct	tor	
SU	- BJE((Project Engineer)	Construct No. C-			**************************************	
1.	1. NAME OF APPLICANT Globe-Union Incorporated						
	. TYPE OPERATION OR PROCESS Wirtz Grid Casting Machine						
	NSP	NEW SOURCE X TACE	MODIFICA NSPS		PERMANENT	x	PORTABLE
			Garland, Dallas Lati	County, Te	xas '15" lengi	tude:90	5040'00"
6.	REC	SIONAL OFFICE: Fav	COMMENTS				
7.	LOC	CAL PROGRAM: No co	mment				
8.	. AIR QUALITY: No comment						
9.	O. COMPLIANCE: Favorable						
10.	LEC	GAL: No legal acti	on pending				
11.		NAME AND RATE OF Air Contaminant	CONTAMINANTS TO	BE EMITTEI		Regul	ation Allowabl
		Lead Oxide		0.054#/hr			
		Based on measurem	ents from simila	r facility			
	В.	TYPE AND QUANTITY	OF AIR POLLUTIO	ON CONTROL	DEVICES PR	OPOSED	:
		None					
	С.	COMMENTS - TECHNI The emission rate		est of sim	ilar facili	.ty.	
	D.	SPECIAL PROVISION	S:				
		See attachment en	titled "Special	Provisions	C-2617, 1-	.4 . "	
12.	REG		IS RECOMMENDED T BJECT TO SPECIAL TIEN OBJECTIONS	L PROVISION	NS NOTED AB		
Da	te	Received 7-30-74 Supp. App. Receive Sent to Region 12	d 12-27-74 2-27-74	d ax	Signed_	New	rence E. Recort



A CONSTRUCTION PERMIT IS HEREBY ISSUED TO

GLOBE-UNION INCORPORATED

AUTHORIZING CONSTRUCTION OF

Wirtz Grid Casting Machine No. 6

WHICH IS TO BE LOCATED AT

Garland, Dallas County, Texas Lat. 32054'15" Long. 96040'00"

and which is to be constructed in accordance with and subject to the Texas Clean Air Act, as amended (Article 4477-5, VTCS). and all Rules. Regulations and Orders of the Texas Air Control Board. Said construction is subject to any additional or amended rules, regulations and orders of the Board adopted pursuant to the Act, and to all of the following conditions:

- This permit is non-transferable from person to person or from place to place.
- This permit is automatically void if construction is not begun within one year of the date of issuance.
- This permit is automatically void when an operating permit is issued or denied.
- The facility covered by this permit shall be constructed as specified in the application for permit to construct.
- The Board shall be notified in writing at least thirty days prior to the start-up of the facility authorized by this permit.
- The Board shall be notified in writing at least thirty days prior to the start of any required monitoring of the facility authorized by this permit.
- 7. This permit is not a guarantee that the facility will receive an operating permit at the end of the construction period, nor does it absolve the holder from the responsibility for the consequences of non-compliance with all Rules and Regulations and orders of the Texas Air Control Board or with the intent of the Texas Clean Air Act.
- 8. Special provisions:

See attachment labeled "Special Provisions C-2617, 1-4."

Acceptance of the permit constitutes an acknowledgement and agreement that the holder will comply with all Rules, Regulations and Orders of the Board issued in conformity with the Act and the conditions precedent to the granting of this permit.

PERMIT NO. C- 2617 DATE January 24, 1975

TEXAS AIR CONTROL BOARD

and PREVEN'.

SPECIAL PROVISIONS C-2617

- 1. Emissions from this facility must not become excessive or an odor nuisance as determined by the Executive Director of the Texas Air Control Board. If an odor nuisance develops or emissions become excessive, additional abatement equipment or emission reduction measures acceptable to the Executive Director must be implemented.
- 2. Upon completion of the grid casting machine, one upwind sample and two downwind samples for ground level concentration of particulate matter shall be made simultaneously by an independent laboratory or testing service.
- 3. Air contaminants to be tested for include (but are not limited to) lead oxide.
- 4. Opacity of emissions from the exhaust stack must not exceed 20%, as determined by a trained observer, averaged over a 5-minute interval except during a 5-minute start-up period.



OFFICE OF THE

COUNTY HEALTH DEPARTMENT

1936 AMELIA DALLAS, TEXAS 75235

January 14, 1975

Vr/

Steve Spaw, Director Permits and Inventory Division Texas Air Control Board 8520 Shoal Creek Blvd. Austin, Texas 78758



Re: Permit Application No. C-2617 Globe -Union Incorporated Wirtz Grid Casting Machine, No. 6 Garland, Dallas County L. E. Pewitt, Engineer

Dear Mr. Spaw:

We have received a copy of the above mentioned permit application. If the proposed facility is operated in accordance with the regulations of the Texas Air Control Board and with any special conditions attached to the permit, there should be no nuisance created by the facility.

We appreciate your keeping this office informed of applications within Dallas County.

Yours very truly,

J. M. Pickard, M.D. Why I Director

LLJ/mjb

AIR QUALITY EVALUATION	ON DIVISION COMMENTS ON PERMIT	APPLICATION # $C-26/7$
Engineer: L. Pew	itt sa	r gr
Applicant: Dead		
Region: 8 Cou	inty: stallas	
Lat. 32 - 54 - 15	Long. 96 - 40 - 00	
Yes No	Location of this source and in the area are marked on the	
Pollutant	Added Tons/Year from Permit Unit	Current Emissions in the County
(LEAD OXIDE)	0.17	13630
Yes No	Additional AQED comments are	e attached.
	Air Quality Evaluation comme	ents complete.
mus		N -
	Signed Chief Air C	Dality Data Analysis
	Date 1/9/7	MATICY DATA ANALYSIS

	INTER-OFFICE Y D. Y Company
ROM -	Region (8) X Compliance X Local Dance: County Legal Air Quality
UBJECT.	Request for Comments on Permit Application No. C-2617 DATE: 12-27-74
1.	NAME OF APPLICANT GLOBE-UNION INC.
2.	TYPE OPERATION OR PROCESS WIRTZ GRID CASTING MACHINE
3.	NEW SOURCE ☑ MODIFICATION ☐ PERMANENT ☑ PORTABLE ☐
4.	IDENTIFICATION NUMBER6
5.	FACILITY LOCATION IIII SHILDH ROAD GARLAND, DALLAS COUNTY
	Latitude: 32-54-15 Longitude: 96-40-00
6. A.	PRELIMINARY EVALUATION OF APPLICATION: NAME AND RATE OF CONTAMINANTS TO LE EMITTED: Air Contaminant Emission Rate Uncontrolled Pate Regulation Allowable Leao Oxide 0.054 1/42 0.054 1/42 ——
В.	TYPE AND QUANTITY OF A. POLLUTION CONTROL DEVICES PROPOSED:
С.	COMMENTS - TECHNICAL REVIEW THE EMIESION PATES ARE BASED ON TESTS DE SIMILAR FACILITY
D.	PROPOSED SPECIAL PROVISIONS:
	6-0 0 6
REQU	JESTED COMMENTS: (Please return your comments as soon as possible within 15 days after you receive this information.)
	Opschidule = 24/5/52 manufact. batteries
	Opschidule = 24/5/52 manufact. batteries

BOARD FILE

SIGNED	
DATE	FORM NO. AG-2-

AUSTIN

TEXAS

1	INTER-OFFICE X Region (8) X Compliance and
FROM _	Region (8) X Compliance Region (8) X Compliance Region (8) X Local Double Compliance Region (8) X Air Quality
SUBJECT	Request for Comments on Permit Application No. (-2617 DATE: 12-27-74
1. 1	NAME OF APPLICANT GLOBE-UNION INC.
2.	TYPE OPERATION OR PROCESS WIRTZ GRID CASTING MACHINE
3. N	NEW SOURCE MODIFICATION PERMANENT DORTABLE
4.	DENTIFICATION NUMBER 6
5. I	FACILITY LOCATION IIII SHILDY ROAD GARLAND, DALLAS COUNTY
100	Latitude: 32-54-15 Longitude: 96-40-00
Α.	NAME AND RATE OF CONTAMINANTS TO DE EMITTED: Air Contaminant Emission Rate Uncontrolled Pate Regulation Allowable LEAD OXIDE 0.084 HAR 0.084 HAR
R	TYPE AND QUANTITY OF A. POLLUTION CONTROL DEVICES PROPOSED:
ь.	NONE
С.	THE EMISSION PATES ARE BASED ON TESTS OF SMITHE THERITY
D.	PROPOSED SPECIAL PROVISIONS:
	6-0 0 6
DEOU	STED COMMENTS: (Place rature your comments as seen as possible within

REQUESTED COMMENTS: (Please return your comments as soon as possible within 15 days after you receive this information.)

Inspection of Globe-Union's grid casting operations revealed that the proposed installation of a Wirtz Grid Casting Machine to replace an older 8-mold grid casting machine is not an identical replacement. A permit is, therefore, required. Emissions of lead particulates to the atmosphere should not be increased by this replacement; however, in addition to the pig lead melted to make grids, a large amount of lead oxide is used in battery production. No visible stack or vent emissions were noted from any source.

Recommendations: Approve permit to construct No. C-2617 with the inclusion of special provisions 6, 7, 9, and 10.

Region VIII comments prepared by Harry Nixon. SIGNED M

DATE JANUARY 3, 1975

	INTER-OFFICE	Region (8) X Compliance
EBON .	-Permits Section To	Local Daus Comme Legal
r NOM 1		
SUBJEC	ECT Request for Comments on Permit Applicat	
1.	NAME OF APPLICANT GLOBE-UNION .	INC.
2.	. TYPE OPERATION OR PROCESS WIRTZ G	RID CASTING MACHINE
3.	NEW SOURCE MODIFICATION	PERMANENT DORTABLE
4.	. IDENTIFICATION NUMBER6	
5.	THE STITE OF ROOM	
	Latitude:	32-54-15 Longitude: 96-40-00
6.	A. NAME AND RATE OF CONTAMINANTS TO LE EMIT Air Contaminant Emission Rate Uncontro	TED: 11ed Pate Regulation Allowable
	LIGHT CXIDE U, UST THE UN	334 7 HR
	B. TYPE AND QUANTITY OF A.R POLLUTION CONTR	OL DEVICES PROPOSED:
	C. COMMENTS - TECHNICAL REVIEW THE EMISSION PAGES ARE BASED ON	TESTS OF SIMILAR FACILITY
	D. PROPOSED SPECIAL PROVISIONS:	
700000	Q-D D D	
	15 days after you recei	ve this information.
,	no apparent legal problems	DEC 30 1974
		LEGAL
	BOARD FILE	AIR POLLUTION CONTROL

DATE FORM NO. AG-2-A

Texas Air Control Board TEXAS

		-	
	-	1	-
1		1	
	~		

1/1	INTER-OFFICE X Region (8) Compliance
FROM	- EWITT Permits Section to X Local Daus County Legal
BJECT	Request for Comments on Permit Application No. C-2617 DATE: 12-27-74
1.	NAME OF APPLICANT GLOBE-UNION INC.
2.	TYPE OPERATION OR PROCESS WIRTZ GRID CASTING MACHINE
3.	NEW SOURCE ☑ MODIFICATION ☐ PERMANENT ☑ PORTABLE ☐
4.	IDENTIFICATION NUMBER 6
5.	FACILITY LOCATION IIII SHILOH ROAD GARLAND, DALLAS COUNTY Latitude: 32-54-15 Longitude: 96-40-00
6. A	PRELIMINARY EVALUATION OF APPLICATION: NAME AND RATE OF CONTAMINANTS TO LE EMITTED: Air Contaminant Emission Rate Uncontrolled Pate Regulation Allowable Lead Oxide 0.054 1/44 0.054 1/44
В	TYPE AND QUANTITY OF A.R POLLUTION CONTROL DEVICES PROPOSED:
C	THE EMISSION PATES ARE BASED ON TESIS OF SIMILAR FACILITY
D	. PROPOSED SPECIAL PROVISIONS:
	6-D 9 10
REC	UESTED COMMENTS: (Please return your comments as soon as possible within 15 days after you receive this information.)

BOARD FILE

SIGNED	
27722	

1	INTER-OFFICE X Region (8) X Compliance
ROM 🖵	Region (8) X Compliance X Local Daus Comy Legal X Air Quality
BJECT -	Request for Comments on Permit Application No. C-2617 DATE: 12-27-74
1.	NAME OF APPLICANT GLOBE-UNION INC.
2.	TYPE OPERATION OR PROCESS WIRTZ GRID (ASTING MACHINE
3.	NEW SOURCE MODIFICATION PERMANENT PORTABLE PORTABLE ■
4.	IDENTIFICATION NUMBER6
5.	FACILITY LOCATION IIII SHILDH ROAD GARLAND, DALLAS COUNTY
	Latitude: 32-54-15 Longitude: 96-40-00
Α.	PRELIMINARY EVALUATION OF APPLICATION: NAME AND RATE OF CONTAMINANTS TO SE EMITTED: Air Contaminant Emission Rate Uncontrolled Pate Regulation Allowable Lead Oxide 0.084 1/44 0.084 1/44
В.	TYPE AND QUANTITY OF A. POLLUTION CONTROL DEVICES PROPOSED:
С.	THE EMISSION PATES ARE BASED ON TESTS OF SIMILAR FACILITY
D.	PROPOSED SPECIAL PROVISIONS:
	O-D O O
REQU	JESTED COMMENTS: (Please return your comments as soon as possible within 15 days after you receive this information.)

BOARD FILE

SIGNED	
DATE	
	FORM NO ALL



TEXAS AIR CONTROL BOARD

AUSTIN, TEXAS - 78758

PHONE 512/451-5711 8520 SHOAL CREEK BOULEVARD CHARLES R. BARDEN, P. E. EXECUTIVE DIRECTOR

JOHN L. BLAIR Chairman

HERBERT W. WHITNEY, P.E. Vice-Chairman

December 30, 1974

EXECUTIVE DIRECTOR

ALBERT W. HARTMAN, JR., M.D.
E.W. ROBINSON, P.E.
CHARLES R. JAYNES
JAMES D. ABRAMS, P.E.
FRED HARTMAN
WILLIE L. ULICH, Ph.D., P.E.
JOE C. BRIDGEFARMER, P.E.

Dr. J. M. Pickard, Director
DALLAS COUNTY HEALTH DEPARTMENT
1936 Amelia Street
Dallas, Texas 75235

RE: Permit Application No. C-2617
Globe-Union Incorporated
Wirtz Grid Casting Machine, No. 6
Garland, Dallas County
L. E. Pewitt, Engineer

Dear Mr. Pickard:

This is to notify you that the above referenced company has submitted an application for a permit to construct a facility in accordance with Regulations of the Texas Air Control Board. A copy of the application data is attached or the applicant indicated that he has already sent a copy to your office. This Agency has assigned a permit application number as referenced above.

Your comments concerning this application should be submitted to this office within fifteen (15) days from the date of this letter so that they can be evaluated before any decision is made. We appreciate your time and effort, and if further information is needed, please let us know.

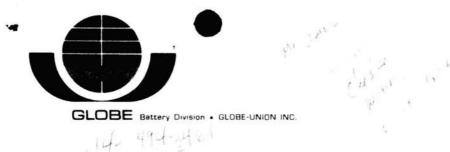
Yours very truly,

Steve Spaw, Director

Permits & Inventory Division

Texas Air Control Board

board, file



December 3, 1974

Mr. Lawrence A. Pewitt Texas Air Control Board 8520 Shoal Creek Blvd. Austin, Texas 78758

Re: Operating Permit Application # 2617

Dear Mr. Pewitt:

I am writing to confirm the telephone conversation between you and Mr. Fyffe, of our Dallas plant, on Wednesday Nov. 27th. This permit application is for a Wirtz grid casting machine that will replace an "8" mold style casting machine that is now operating in the Dallas plant. We have had a program underway for several years to replace all of the old style "8" mold casting machines as funds were available. The machine mentioned is the last one still operating at Dallas and I will assure you that it is to be removed completely from service and will not be kept on standby.

After the initial subject application was turned down we have had to review this project very closely. Since this is a direct replacement and does not add to our productivity, the economics are marginal to begin with, and an additional \$10,000 to \$12,000 to the installed cost for emission control puts the payback in doubt.

We had not anticipated that any emission control would be necessary and didnot include any in our cost projections since the emissions from the Wirtz caster is only a fraction of that from the existing "8" mold caster and the replacement will result in a net reduction in emissions. We feel that this is a valid consideration for this application and request that you review the application in light of it. I will be glad to furnish any information I can that might be helpful in your review. You may feel that a visit to the Dallas plant to view the operations first hand would be useful in your appraisal. If so, please be assured that we will assist in scheduling such a visit.

Sincerely,

GLOBE-UNION INC.

FEStoughton

G.E. Stoughton

Mgr. Corporate Facilities

cc: C.O. Wanvig, III

W. Wall

R.F. Nicolai J.M. Beaudoin

File

mf

November E. 1974

Mr. Robert F. Nicolsi Corporate Pollution Control Engineer GLOBE-UNION INCORPORATED P. O. Box 591 Milwaukee, Wisconsin 53701

> Re: Application C-2617 Garland, Dallas County

Dear Mr. Nicolai:

This is in reference to our telephone conversation of November 4, 1974 and previous discussion concerning your proposed lead grid casting facilities.

We will hold your permit application pending your decision as to the type and size of pollution control device that will be installed on the above facility.

If we may be of further help to you in this matter, please call on be.

Yours very truly,

Permits Section Texas Air Control Board

cc: Mr. Melvin Lewis, Regional Supervisor, Fort Worth
Dr. J. M. Pickerd, Director, Dallas County Health Dept.,
Dallas
LEP/et, board, fild

WITTE

(73.9)

TEXAS AIR CONTROL BOARD FORM PI-1, GENERAL APPLICATION

(Read Instructions Before Completing)

1	PER	MIT TO BE ISSUED TO GLOBE-UNION INC.	
	Maili	P. O. BOX 591 MILWAUKEE, WISCONSIN 53201	
	Indiv	idual authorized to act for applicant Name G. E. Stoughton Little Corporate Fac	10.13
		G. E. Stoughton One of the Corporate Factors One of the Corporat	
II.	Name	ATION OF PERMIT UNITS (Latitude and Longitude must be to the nearest 15 seconds) GLOBE-UNION INC. Street address in a mabble: 1111 Shilo steady Garland County Dallas Latitud N32°54'15" Longitude W96°	
 			
	A B. C. D.	Name of operation of processed permit unit Lead Acid Battery Manufacturing Plant Permit unit identification number 3-Stand Wirtz Grid Casting Machine - Model Type (Check one) Permittent Permittent Operating schedule Hours day 24 Days week 5 Weeks year 52	нст-3
12/	Dt. D		
	A C	MIT UNIT CLASSIFICATION (Check applicable blocks) 8 New Permit Unit Proposed start of construction Aug. '74 start of operation Oct. '74 1 Modification of Permit Unit (Date) 1 Change in Location	
		Change in Ownership	
-	F. [Permit Unit New Operating Under Permit Number	
ven eviou 19/73 Drg 47 k	В 2	adjacent and nearly lands which may be affected by the emissions geographical viatares eigh as highways, toads after righthaut landmarks, distance to the expect of nearest city or fown if beautid outside an incorporated municipality property is located within a town or city, a city map may be used to present this internation, and it outside a fown of city, a highway map may be used to present this internation, and it outside a fown of city, a highway map may be used to present this internation, and it outside a fown of city, a highway map may be ordered either through the Lexas Highway Department. Assim or through the State District Highway I ngineer for the courts. Give a legal description of the track of Lind upon which the plant of facilities located. The term liegal description either a meters and bounded description or the block and lot number of a platfed subdivision which would be sortable for city the transfer of title to-real property. Submit a plot plan of the property, to scale, showing the boundaries, the location of all sources of any air contaming the property, the distance from each source to the nearest boundary line, prevailing wind direction, true north direction does not contain the property of the information deemed relevant by the applicant. Identify the sources by numbers, use the same in for those sources in this permit that will be assigned in the flow diagram.	If the country Texas, means we trials ants on ction, a
VI.	lf It	em IV.F is not checked, submit the following information	
be-Ut	л. n i o 34С	Process Flow Diagram. Prepare and attach a flow diagram identifying significant individual processes and or operations to number) points where raw materials, chemicals, and finels are introduced, where gaseous emissions and or informe part may be discharged including intermediate releases where finished products are obtained, and location of pollution control operation of Process. Prepare and attach a written description of each process and of the function of the equipment process. Identify items of equipment by numbers corresponding to flow diagram numbers. The description must be in sidefall to determine the general operation of the process. Particular attention must be given to explaining all stages in the where there is or may be a discharge of any solid, liquid, or gaseous materialis) into the atmosphere. I stimate number a of air pollution abatement desires to be used such as I electrostatic presipitator. 2 evaluates, I incinerator, 2 barboas	devices in the life ient process and type
VII.	Has	local Air Pollution Control Program been contacted? Salves No No active local program in the city or c	ounty.
	_	On previous applications Robert F. Nicolai Corporate Pollution Control	Fngir
VIII.	state furth	that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and er state that to the best of my knowledge and belief, the project for which application is made will not in any way violate and of the Texas Clean Air Act. Article 4477-5, Vernon's Texas Civil Statutes, as amended, on any of the rules and regulation is Air Control Board or any local governmental ordinance or resolution emected pursuant to the Lexas Clean Air Act.	belief 1



METL



July 24, 1974

Texas Air Control Board 820 East 53rd Street Austin, Texas 78751

Attention: Mr. Charles Barden,

Executive Director

Gentlemen:

SUBJECT: APPLICATION FOR A CONSTRUCTION PERMIT FOR

(1) HCT-3 WIRTZ LEAD GRID CASTING MACHINE,

STACK #155

We are submitting the following additional information relating to our request.

VI-A Process Flow Sheet attached.

VI-B This application is for a new unit to be installed adjacent to the existing (5) Wirtz Casting Machines. See Flow Sheet 1-K, identical to units 3,4,5. Based on the Ettelt Engineering test data of June 18-21, 1973 for similar units, we should expect an emission rate of .054#/hr of lead particulate at a temperature of 158°F. The ventilation system will exhaust about 2600 CFM of air at a velocity of 29 feet per second. The stack height will be 26 feet above grade. The natural gas consumption will be about 350,000 BTU/hr.

The production rate for the #6 unit will be approximately the same as the present units. This machine can melt and cast into grids about 1060# of lead per hour. The two existing 8-mold grid casting machines will be placed on stand-by.

Descriptive drawing and photo of a Wirtz Caster is attached.

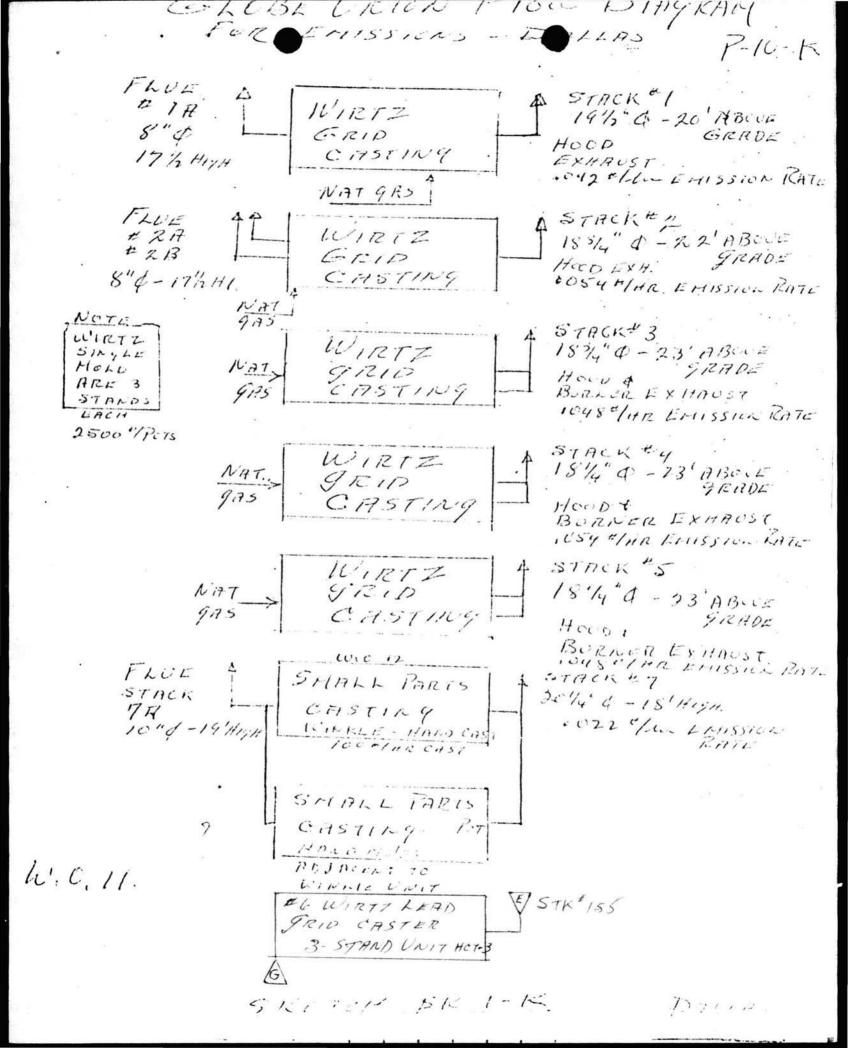
Very truly yours,

Of Muolar R. F. Nicolai

Pollution Control Engineer

RFN:dj

CC: Mr. Lawrence Pewitt



ETTELT ENGINEERING, Inc.

5220 EAST AVENU UNTRYSIDE, ILLINO'S 60525 . PHONE: 312/482-7205

REPORT OF

STACK EMISSION TESTS

FOR

GLOBE UNION, INC.

1111 Shiloh Road

Garland, Texas 75040



Prepared by:

Ettelt Engineering, Inc. Countryside, Illinois

August, 1973

SUPPLANT OF DAY, THESE 1, 2, 3

	Test 1	Test 2	Test 3
Temperature of gas at sampling point, ${}^{\mathrm{O}}\mathrm{F}$	185	230	158
Average velocity of gas at sampling point, FPM	705	802	1680
Average gas flow rate, SCFM	1195	1180	2615
Particulate matter emission grains per standard cubic foot	0.004	0.005	0.002
Particulate matter emission, pounds per hour	0.042	0.054	0.054

TABLE 14

STACK AND SAMPLING TRAIN DATA, TEST 3

STACK DATA

Stack Designation	Stack #4
Process Description	grid casting, single mold, pot exhaust, north unit
Cross sectional area of stack at sampling point, sq. ft.	1.817
Position of stack at sampling point	vertical, up
Location of filter (inside or or outside of stack)	inside
Inside diameter of sampling nozzle, inch	1/4
SAMPLING TRAIN DATA	
Barometric pressure, In. Hg.	29.90
Gas Temperature at meter, degrees F	70
Gas vacuum (average) at meter discharge, In. Hg.	3.7
Average gas sampling rate, CFM	0.55
Volume of dry gas sampled at standard conditions, SCF	57.90
Dust sample weights, grams Thimble Impinger Train & Rinse	0.0077
Total weight of dust collected, grams	0.0090

TABLE 15

TEST DATA, TEST 3

Number of sampling points	12
Duration of each run, minutes	120
Average velocity head, inches of water at 70 degrees F	0.204
Average gas temperature, degrees F	158
Gas velocity, average feet per minute	1680
Gas flow rate at stack conditions ACFM	3055
Gas flow rate at standard conditions SCFM	2615
Percent moisture in stack gas, by volume, %	4.2

TABLE 16

STACK EMISSIONS, TEST 3

PARTICULATE MATTER EMISSIONS

of dry gas at 70 degrees F and 29.92 In. Hg.	0.002
pounds per hour - non-organic	0.054
Pounds per hour, organic	
Total particulate emission	. 0.0
pounds per hour	0.054
ORGANIC MATERIAL EMISSIONS	
Parts per million	n/a
Pounds per hour	n/a
Total organic emissions, solid and	n/a



TEXAS AIR CONTROL BOARD

1100 WEST 49th STREET
AUSTIN, TEXAS - 78756 AUGUST 1.

Corporated Politikion Control Engineer

CHARLES R. BARDEN, P. E.

EXECUTIVE SECRETARY

Ser Fermit Application C-3617

degland, belies Courty

Dear Sir:

This will acknowledge receipt of your general Application for Permit to Construct or Modify a Facility, Form PI-1. After evaluation of your initial application, we have determined that additional information is necessary before a Construction Permit may be issued. Please supply all information as requested on the attached Supplemental Application, Form PI-2. (Since all parts of Supplemental Application, Form PI-2, are not required for every situation, only those sheets believed applicable to your application are enclosed. Additional sheets are available upon request.) Complete and return in accordance with general instructions, Form PI-1.

Yours very truly,

Permits Program
Texas Air Pollution Control Services

Eswrency E. Pawith, 9.3.

Mr. Robert F. Nicolei

Milwentes, Wisconsin 53201

arche inice, inc.

7. C. Say 591

ATTACHMENT INDEX

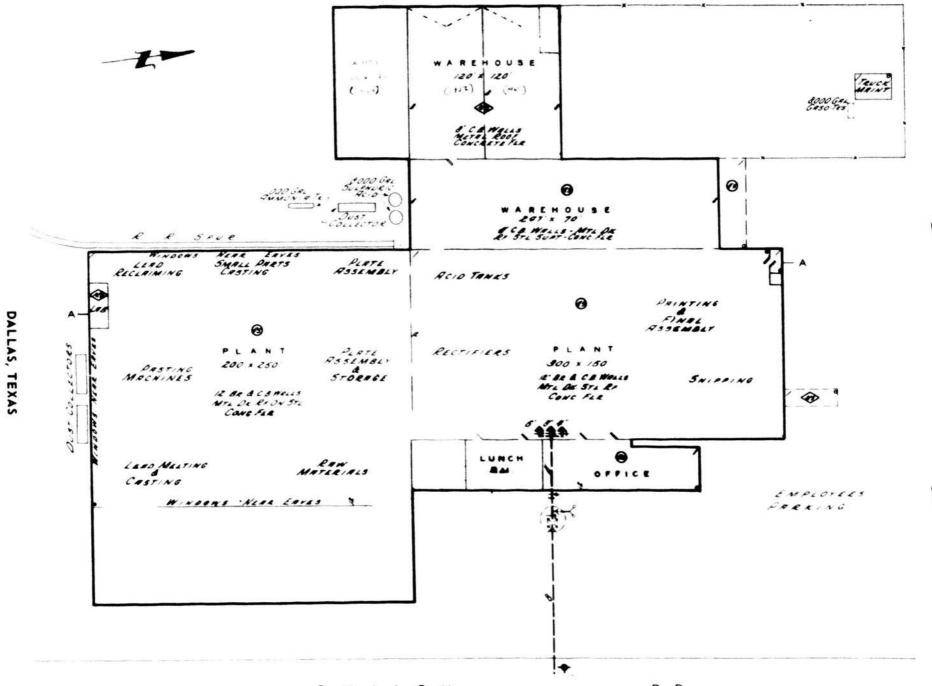
NUMBER		TITLE
连领型	Form PI-2	Supplemental Application
265	Table 1	Emission Sources
	Table 2	Material Balance
	Table 3	Air Pollution Abatement Equipment Data
	Table 4	Combustion Units
	Table 5	Solid Waste Incineration
	Table 6	Boilers and Heaters
and the same	Table 7	Storage Tank Summary
	Table 8	Flare Systems
1	Table 9	Particle Size Distribution
	Table 10	Cyclone Separators
Laet.	Table 11	Fabric Filters
	Table 12	Electrostatic Precipitators
t met	Table 13	Scrubbers or Wet Washers
	Table 14	Absorbers
	Table 15	Adsorbers
	Table 16	Simplified Data Sheet for Particulate Dust Collector
aet.	Other Inform	nation Respublished VI





CONCRE UNICAL

DALLAS, TEXAS



SHILOH

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